PAINT and VARNISH Production

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES

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AUGUST
1954

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(REG U.S. PATENT OFFICE)

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOL. 44 AUGUST, 1954 NO. 8

NEXT ISSUE

Due to production difficulties we are unable to present in this issue the article entitled, "Pigmentation of Flat Wall Paints," as was announced in our July number. However, this article will definitely appear in the September issue and hope that no one was inconvenienced.

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Editorial Comment

August, 1954

Plain Talk

IN his annual address, "Plain Talks," before the recent ASTM meeting in Chicago, retiring president, L. C. Beard, Jr., assistant director of the Socony-Vacuum Laboratories, dwelt on what he considers an unhealthy trend in science—the breakdown in communications between the various sciences and the public.

In the words of Dr. Beard, "The sciences have become so complex and workers in them have built up their own vocabularies to such an extent that a chemist has difficulty in understanding a physicist; the biologist can't talk to the geologist; none of them can talk plainly to the engineer. Sometimes the engineer can't get his ideas across to management; and few technical people can explain their aims and what they have done, to the public. This can be done well and quickly only if each has a clear understanding of what the other is talking about. This breakdown in communications retards invention, and stifles the fruits of it."

As Dr. Beard observed, the prime reason for this breakdown in communications among the scientists themselves and the public is the growing trend of specialization. As a result, scientists have retreated so far into the remote reaches of specialization that they have largely forgotten their obligation to the public.

However, we cannot deny that specialization has contributed much toward our technical development and progress. In all phases of engineering, chemistry, physics, biology, medicine, etc., we find specialists.

For example in the field of paint technology, the services of resin chemists, pigment chemists, solvent chemists, surface preparation experts, etc., are needed to solve many of the complex problems facing the paint industry today. It must be emphasized that only the combined efforts of these experts bring results.

In this connection, the various Paint and Varnish Production Clubs through their technical committee meetings have shown how close cooperation of all specialized groups pays off. Here, experts in the various phases of paint technology gather and present their individual points of view on the problem at hand.

Unquestionably, the success of these technical committee programs is due, to a large extent, to this network of communication, which would never exist if there was a lack of understanding with one another. Plain talk will further strengthen this network of communication and thus insure continued technical progress in all segments of the paint industry.

Finish for Jets

THE *New York Times* recently reported that British paint technologists have recently come up with a finish which will not peel off jet fighters and bombers in flights near the speed of sound. According to the report, this finish has been tested on the latest R.A.F. operational aircraft and will soon be used full-scale on a jet plane.

This finish is based on a newly developed synthetic resin and is said to withstand very high temperatures and adheres to the fuselage despite skin friction at high speeds.

Ordinary finishes will peel off under such conditions because they lack high scuff and abrasion-resistant properties.

Other problems encountered in such applications are the high temperatures caused by skin friction developed at high speeds; which tend to soften the paint and as a result is easily peeled from the surface by the air that rushes past the aircraft; and the tremendous impact (like a shot from a gun) with which rain or hail hits the surface of the aircraft at such high speeds.

This finish is reported to withstand temperatures up to 400 deg. F. and resists the action of jet fuels, lubricants, and hydraulic fluids.

The development of this particular aerodynamic finish is another step toward solving some of the problems encountered in jet aircraft performance, and as the report stated may mean the difference in speed which could spell victory or defeat in combat.

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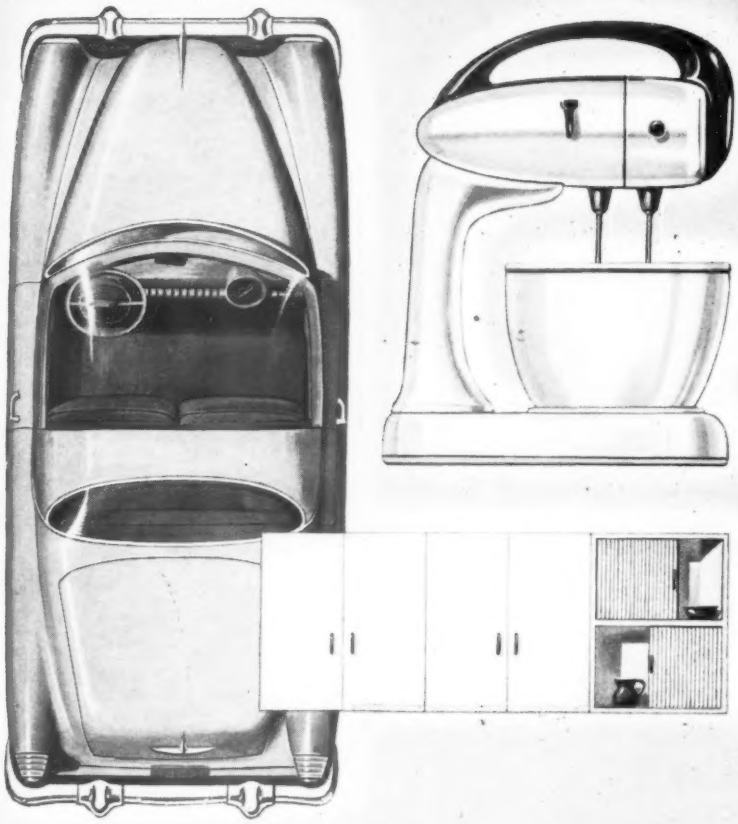

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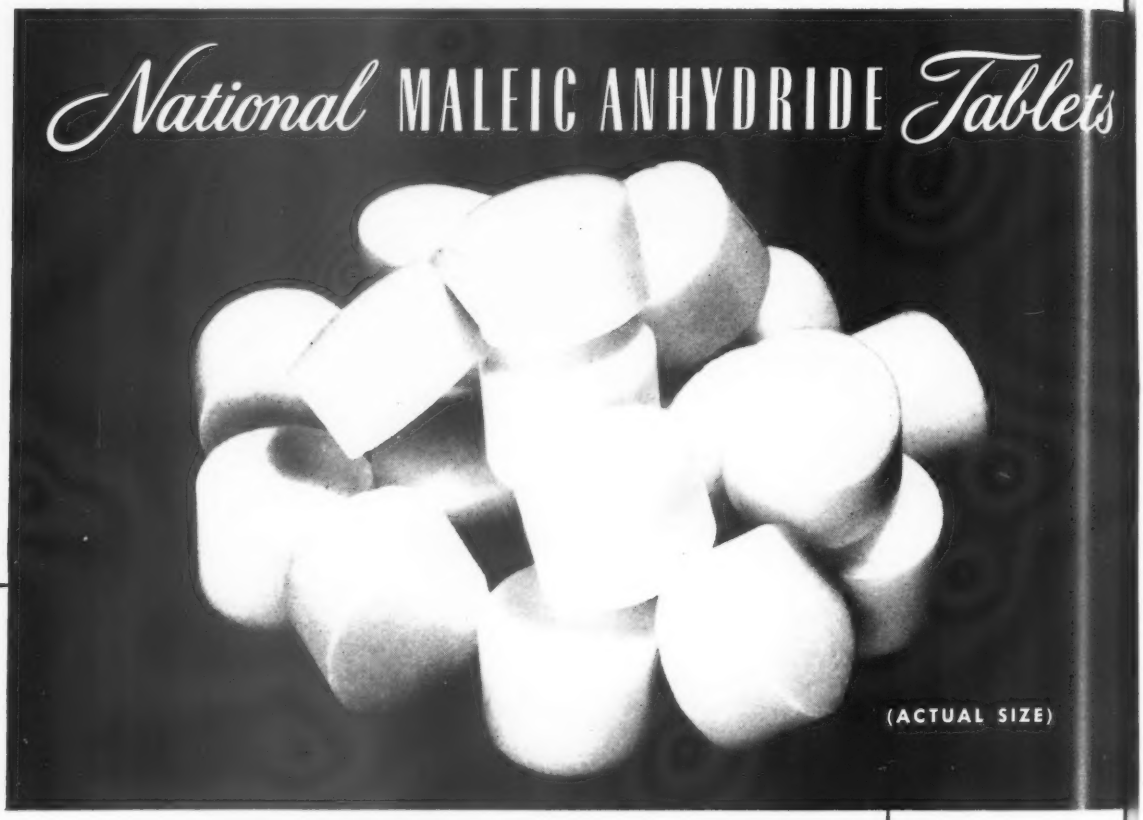

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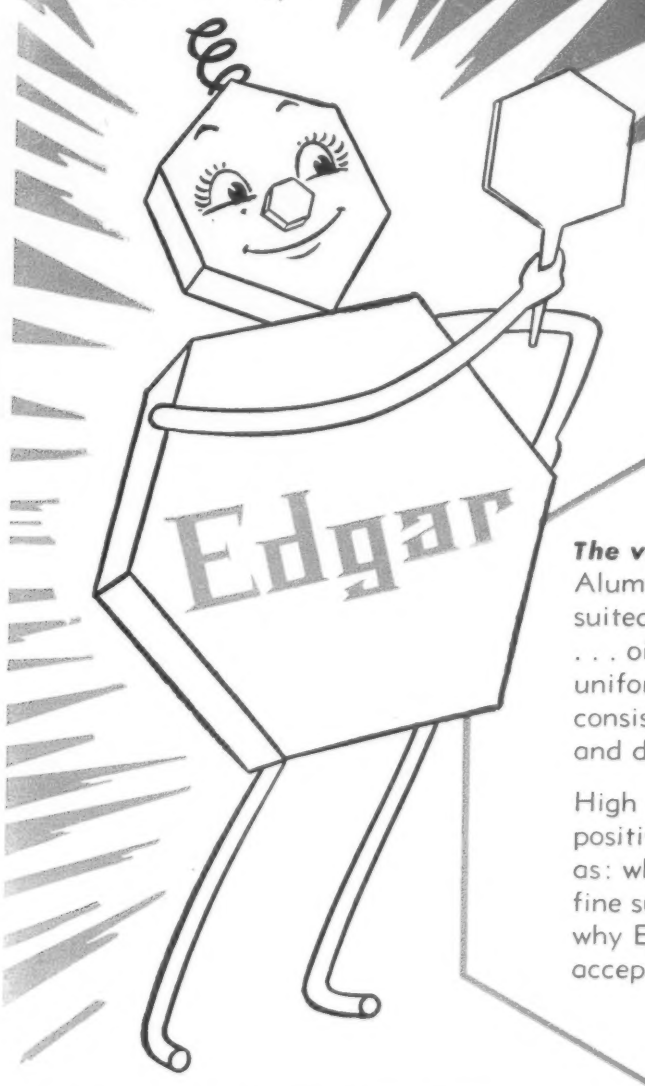

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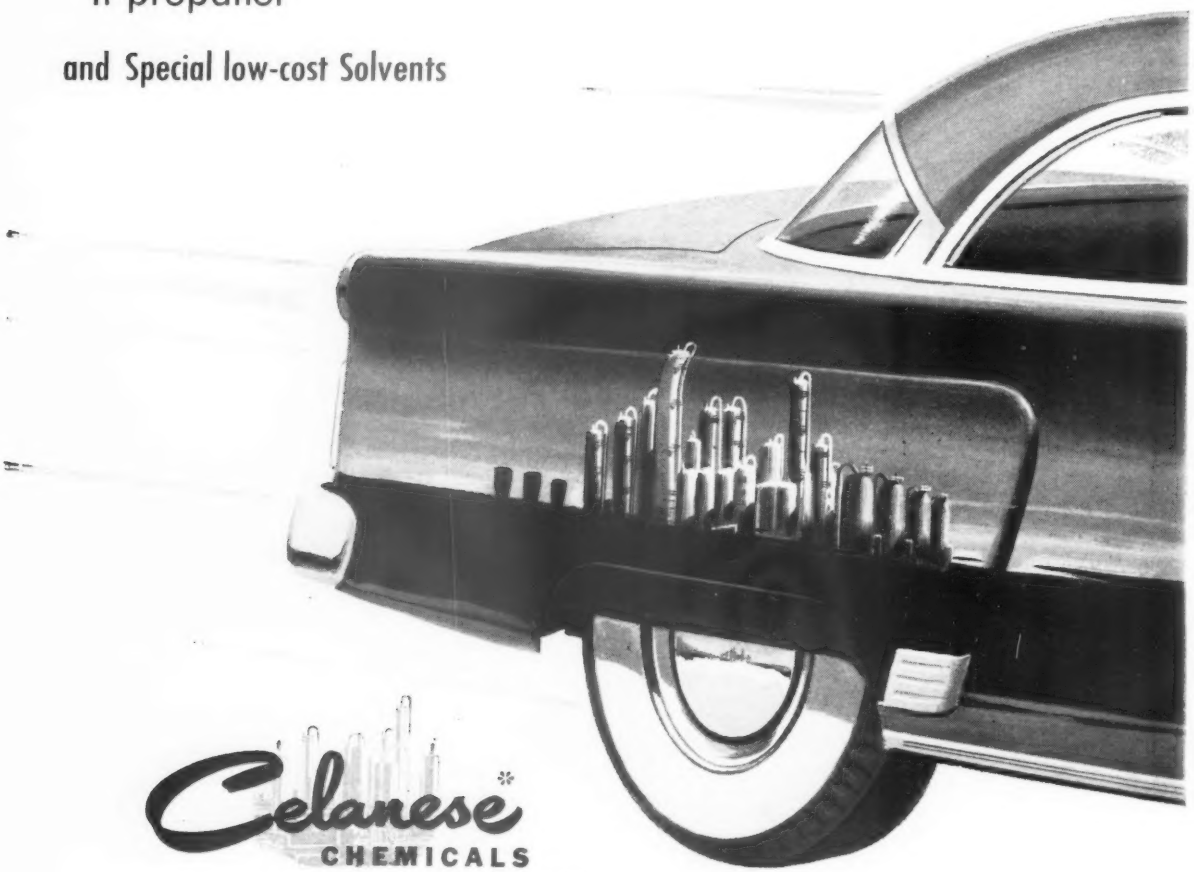

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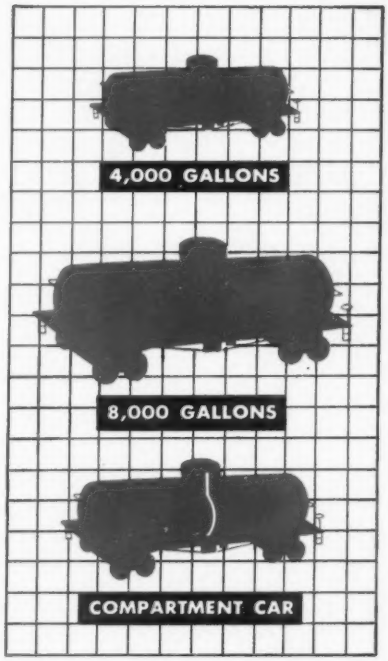

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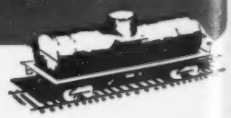

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n-Hexyl CELLOSOLVE	Ethylene Glycol n-Hexyl Ether
n-Hexyl CARBITOL	Diethylene Glycol n-Hexyl Ether
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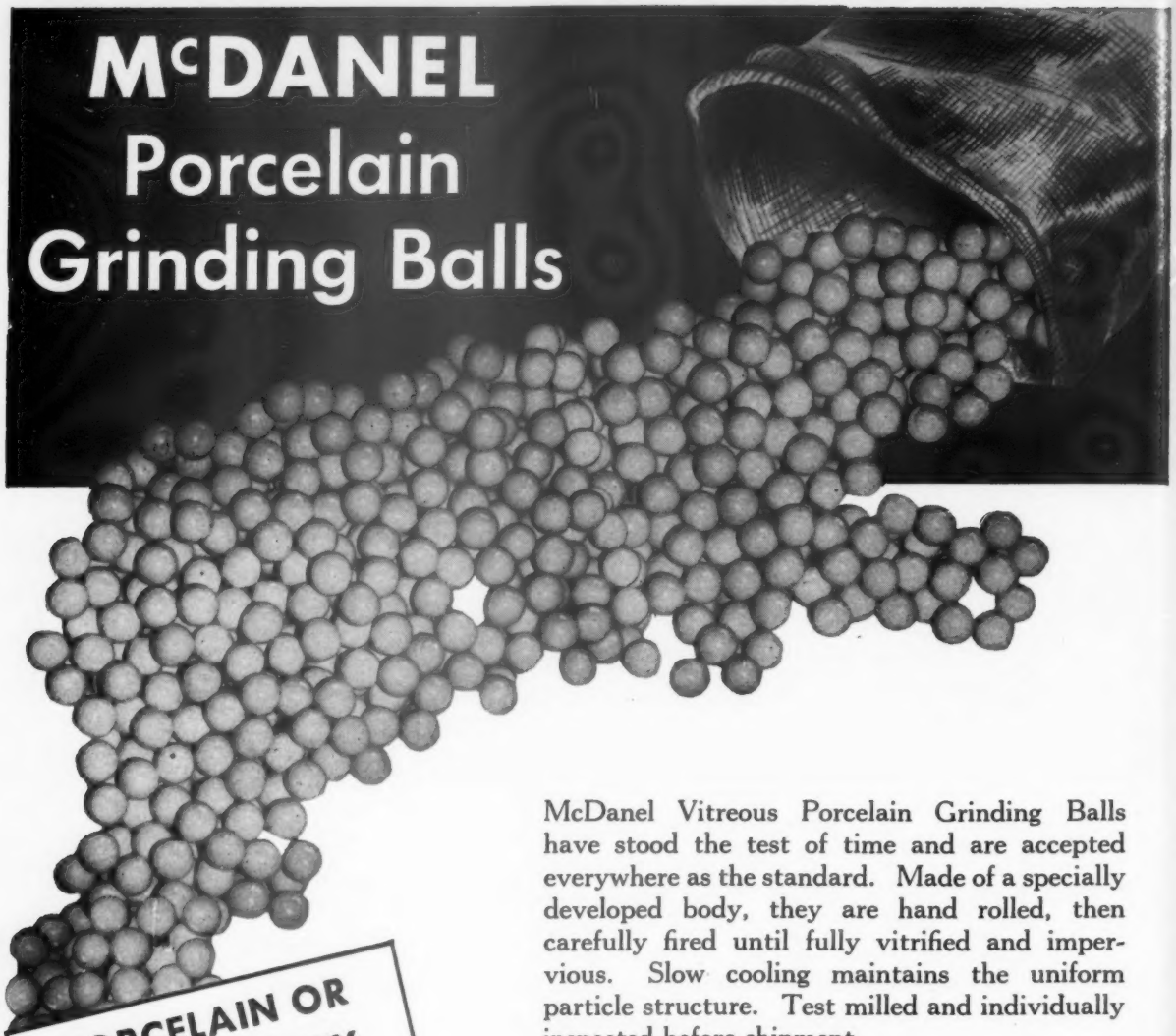

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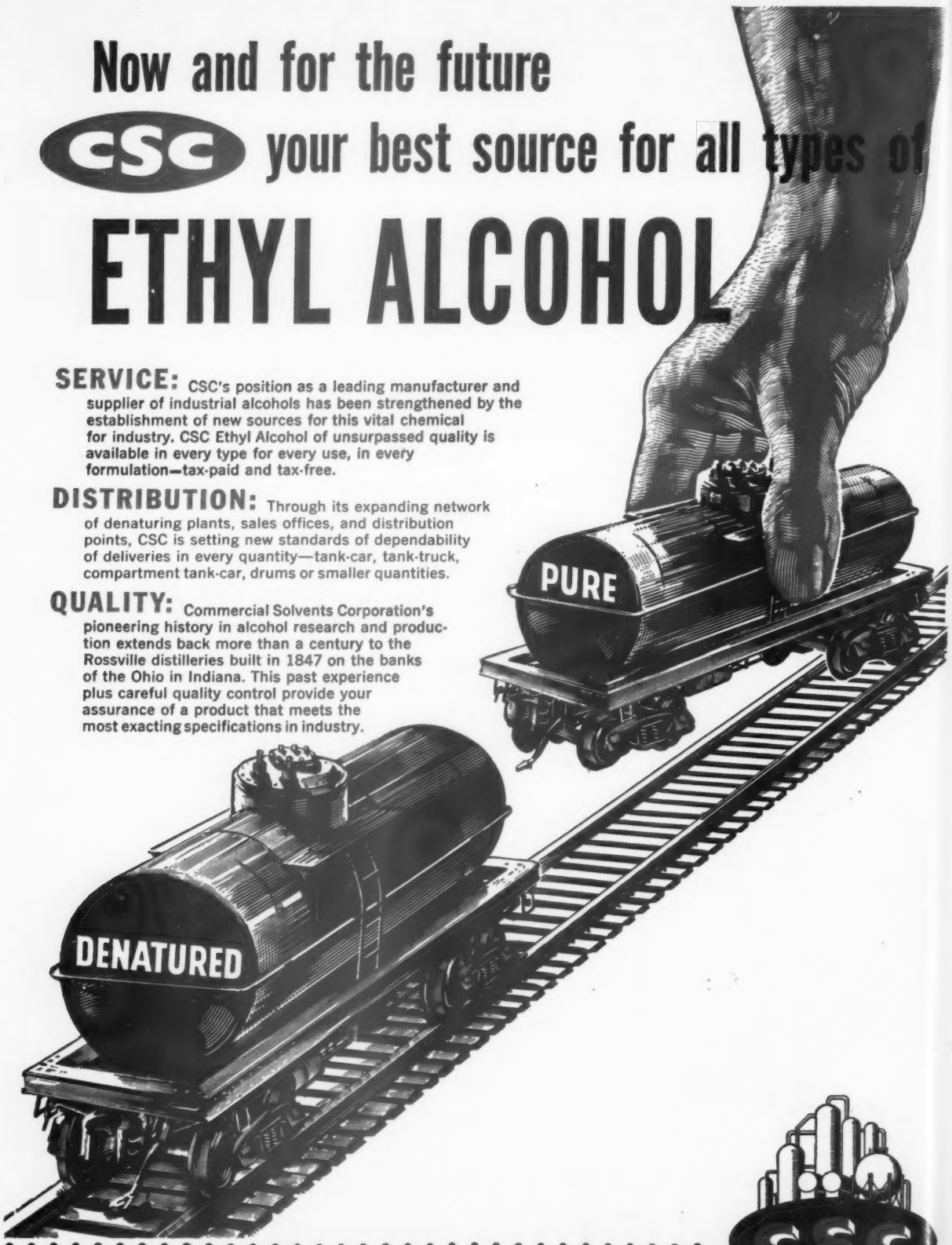

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THE ROLE OF PETROCHEMICALS IN PAINT

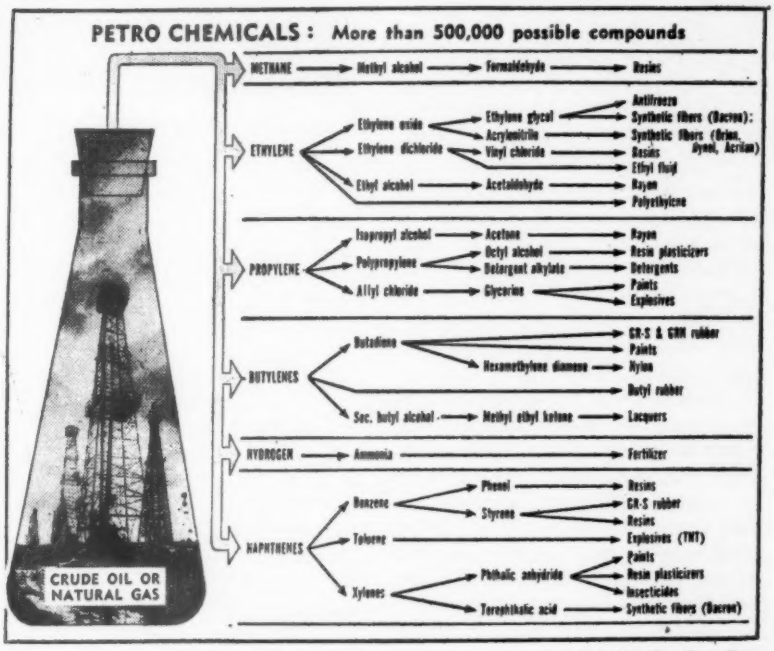
By Dr. PHILIP HEIBERGER*

WHEN petrochemicals came into prominence some two dozen years ago, every segment of the coatings industry underwent a major transformation. Previously, almost all the useful raw materials (other than pigments) were obtained from botanical sources; but in recent years, more and more of the synthetic organic materials used in surface coatings have been derived from petroleum. In fact, many of today's paint products are entirely petrochemical, while most of the others contain at least one component of petrochemical origin.

Which paint chemicals are derived from petroleum?

How are they derived?

With another new chemical industry now in the offing—the direct production of aromatic chemicals by coal hydrogenation—this is a good time to review the role of petrochemicals in paints.



Courtesy of the New York Times

Chart shows number of compounds possible from crude oil or natural gas and their many uses.

In addition to the 58 petroleum refiners, nearly 100 chemical companies are engaged in petrochemical manufacture. The importance of petroleum products may be gauged by noting that the output of processed crude oil is approximately 750 billion pounds per year—a figure which is on the increase. Of this amount, only about 16 billion pounds can be classified as petrochemicals. It is thus apparent that the youthful petrochemical industry has unlimited growth potential.

Bear two things in mind: (1) Oil reserves are limited and despite the false pessimism of the past, the possibility is real that our supply may be exhausted in the not too distant future. (2) It will soon be possible to make directly from coal every product that is now made from petroleum—and much more besides.

It is hoped that this survey, together with an awareness of the forthcoming coal hydrogenation industry, will help the reader anticipate some of the advances the near future may bring.

For the sake of brevity, and at the risk of being pedantic, the various petrochemicals used by the coatings industry will be discussed from the point of view of chemical derivation. A more usual classification would involve product end-use.

What Are Petrochemicals?

All petrochemicals are the consequence of unique chemical transformations which give rise to intermediates not normally present in crude petroleum. Crude petroleum consists essentially of mixtures of paraffinic, naphthenic and aromatic hydrocarbons. The important petrochemical intermediates such as the olefins, diolefins and acetylene are absent. It is these latter compounds which are most useful. To produce them, several important chemical processes are employed. They are

1. Thermal and catalytic cracking
2. Dehydrogenation
3. Alkylation
4. Isomerization
5. Polymerization
6. Cyclization and aromatization.

In *thermal and catalytic cracking*, a paraffin molecule is split into an olefin and a paraffin, each containing fewer carbon atoms than the starting paraffin.

Dehydrogenation ordinarily takes place simultaneously with cracking. By catalytic adjustment, it may be made the main reaction. This produces an olefin with the same number of carbon atoms as

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the starting paraffin. Thus cracking and dehydrogenation are the principal routes to the olefins.

In *alkylation*, an olefin is alkylated with a paraffin to yield a larger paraffin molecule. For example, benzene is catalytically alkylated with ethylene to ethyl benzene, which, in turn, is dehydrogenated to styrene.

Isomerization is a rearrangement of normal paraffins to branched paraffins under the influence of the Friedel-Craft catalysts. Although of importance in gasoline production, this reaction is not yet common to the petrochemical industry.

Polymerization processes need no explanation to paint chemists. However, in petroleum parlance, polymerization usually refers to dimerization or trimerization.

Cyclization, on the other hand, is less known. Cyclization is the ring closure of straight chain paraffins to cyclohexanes with the elimination of hydrogen.

Aromatization is the further dehydrogenation of cyclohexanes into benzene or substituted benzenes. It is fortunate that this reaction is commercially feasible because the coal tar industry would be unable to produce even a fraction of the total benzene, toluene and xylenes required by this nation for economic survival.

Products from Paraffin

Low cost and extreme chemical activity have made the carbon monoxide-hydrogen mixture an important intermediate in many major applications. Originally, this mixture known as synthesis gas, was manufactured from coal or coke by the well-known water-gas reaction (Figure 1).

$$C + H_2O \rightarrow CO + H_2$$

Figure 1

However, the widespread availability of cheap natural gas, coupled with the rising cost of coal, enhanced the desirability of the so-called methane-steam process in which gaseous paraffins are used in place of the coal or coke.

The major outlets for synthesis gas are the methyl alcohol synthesis, the Fischer-Tropsch reaction and the several variants of the "Oxo" process.

The well known methyl alcohol synthesis involves the treatment of the carbon monoxide with hydrogen in the presence of a zinc chromite catalyst at about 450°C. and a pressure of 300 atmospheres. Aside from its use as a solvent and antifreeze, methanol is principally employed as the starting material in the manufacture of formaldehyde, which, in turn, is used in the manufacture of the urea and phenolic resins. Formaldehyde is also the principal intermediate in the manufacture of pentaerythritol, trimethylol ethane and trimethylol propane. By slight modification of the catalysts and conditions, higher alcohols, principally isobutyl alcohol, can be obtained.

One of the most important reactions involving petroleum hydrocarbons is the Fischer-Tropsch synthesis. In this reaction, carbon monoxide and hydrogen are catalytically condensed into high molecular weight hydrocarbons and oxygenated by-products. Wherever synthesis gas is readily obtainable, the Fischer-Tropsch synthesis becomes the petroleum route to hydrocarbons and oxygenated solvents otherwise not available.

With the Fischer-Tropsch process, a single plant designed to process 10 million cubic feet of natural gas daily would produce each day about 750 tons of gasoline, 150 tons of diesel and fuel oil and 200 tons of oxygenated compounds. The latter includes methyl, ethyl, n-propyl, n-butyl and n-amyl alcohols; acetaldehyde, propionaldehyde, n-butyraldehyde; acetic, propionic and n-butyric acids; acetone, methyl ethyl, methyl n-propyl and methyl n-butyl ketones. These figures in terms of ethyl alcohol alone, would supply 20% of the total United States requirements.

View of acrylonitrile unit at American Cyanamid Company's new Fortier plant near New Orleans

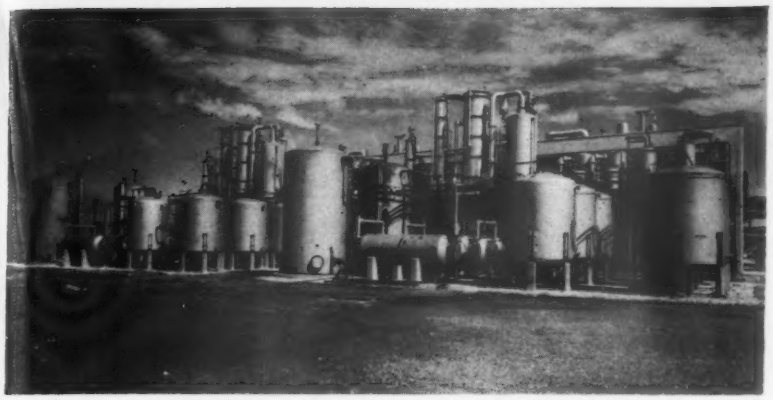
In combination with olefins, carbon monoxide and hydrogen can be converted into aldehydes by the so-called "Oxo" synthesis. This process provides aldehydes containing one more carbon atom than that of the starting olefin. Aldehydes are useful intermediates for making acids, alcohols and more highly condensed products. By suitable modifications, acids and alcohols can be made directly.

Higher paraffins in the liquid phase have been air-oxidized commercially for many years. In general, paraffinic hydrocarbons react with oxygen to give the expected oxidation products such as alcohols, aldehydes, ketones, acids and oxides. Important paint intermediates manufactured by oxidation include formaldehyde, acetaldehyde, propionaldehyde, acetic anhydride, acetic acid, acetone, the butanols, propyl alcohol and methanol.

Many useful products are derived from the chlorination and nitration of pentane and other gases. The bulk of the chloropentanes are converted by hydrolysis to amyl alcohol which is then esterified to amyl acetate. Amylene, a by-product of the amyl alcohol process, is condensed with phenol to make amyl phenol, a popular varnish intermediate. The nitroparaffins are obtained from the vapor phase nitration of propane gas.

Products from Olefins

Olefins do not occur in nature but are produced as by-products in the cracking or pyrolysis of



Using as its principal raw material the petroleum gases from Pan-American Petroleum refinery Carbide and Carbon Chemicals Corp. plant at Texas City produces many synthetic chemicals

petroleum. Cracking is carried out on an enormous scale in the manufacture of gasoline. Products of cracked oil may include olefins, diolefins, aromatics, naphthenes and acetylene. Cracking is the term applied to catalytic heat treatments of petroleum hydrocarbons in the 350-650°C. range, whereas pyrolysis usually indicates temperatures in excess of 650°C.

The hydration of olefins to alcohols is probably the largest operation of the petrochemical industry. There are two general methods of hydration:

1. Absorption in sulfuric acid to give the alkyl hydrogen sulfate, followed by dilution and hydrolysis.
2. Catalytic hydration, using either a liquid phase catalyst or a solid contact catalyst.

Since prehistoric times, the main source of alcohol has always been the fermentation of vegetable matter such as molasses, grain, starch or surplus foodstuffs such as potatoes and maize. In certain countries ethyl alcohol has actually been manufactured from carbide via acetaldehyde. However, the route using ethylene from petroleum is cheaper than any of the fermentation processes.

In addition to its use as a solvent, ethyl alcohol is oxidized into acetaldehyde which is used as a source of synthetic C_2, C_3 and C_4 chemicals. Reactions of acetaldehyde will be discussed later.

Isopropyl alcohol, sec-butyl alcohol, ter-butyl alcohol and the higher alcohols are produced by the hydration of the appropriate olefins. The main outlet for isopropyl alcohol is, surprisingly enough, in the manufacture of acetone.

Glycerol, an almost indispensible alkyd component, was formerly obtained exclusively as a by-product of the soap industry. As such, the price of glycerol was extremely sensitive to demand. Furthermore today, this source alone would no longer be adequate for present-day alkyd requirements. Fortunately, glycerol could be manufactured economically from propene.

It is interesting to note, incidentally, that 100% petroleum based alkyds are realizable—one may obtain the fatty acids from the "Oxo" process, the phthalic anhydride from petroleum derived ortho-xylene, the maleic anhydride from butene, and glycerol from propene, the pentaerythritol from methane and ethylene, and, if desired, glycols from olefins.

Glycerol is manufactured by the chlorination of propene to allyl chloride. Normally, one would expect a saturated dihalide, but at high temperatures a direct substitution takes place on the methyl group adjacent to the double bond, (Figure 2).

$$CH_2=CHCH_3+Cl_2 \longrightarrow CH=CHCH_2Cl+HCl$$

Figure 2

The allyl chloride may be hydrolyzed to allyl alcohol, another useful intermediate.

Glycerol can be made directly from allyl chloride by the addition of hypochlorous acid and subsequent hydrolysis, (Figure 3).

In another process using olefins, ethylene gas is chlorinated to dichlorethane, which is then converted into vinylidine chloride by further chlorination and dehydrochlorination in a molten salt bath.

Manufacture of ethyl cellulose is dependent upon adequate supplies of ethyl chloride. The most economical method of making ethyl chloride is the addition of hydrogen chloride to ethylene. And naturally, the fabulous polyethylene industry depends upon a supply of ethylene!

Another important olefin intermediate is ethylene oxide, which as the name implies, is the oxidation product of ethylene. Its value lies chiefly as an intermediate in chemical syntheses. The ethylene oxide products most familiar to members of the coatings industries are the series of cellosolve and carbitol solvents. When hydrated, ethylene glycol forms. Ethylene glycol is finding widespread use as an anti-freeze and as an essential ingredient in the newer polyester fibres and laminants. Propylene oxide from propene merits similar consideration. Of growing interest to the paint industry is the host of surfactants based on ethylene oxide condensations.

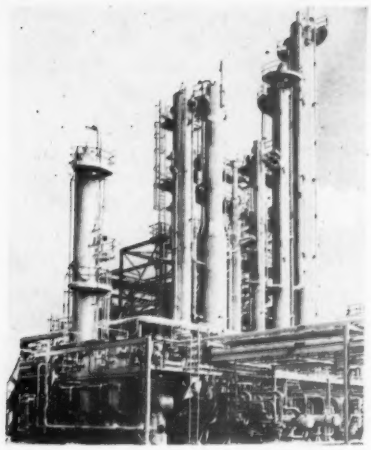
Products from Diolefins

The conjugated 1,3-diolefins are the only diolefins of technical importance. On polymerization, they are converted into the various synthetic rubbers and latices. The recent and successful introduction of latices of butadiene and styrene or acrylonitrile, all petroleum-derived products, has awakened the interest of the paint industry in synthetic rubber developments.

Of the dienes, butadiene is most important and can be made directly

Figure 3

$$CH_2=CHCH_2Cl+HOCl \rightarrow CH_2ClCHOHCH_2Cl+NaOH \rightarrow CH_2OHCHOHCH_2OH$$



Separation towers, exchangers and auxiliary equipment of hydrocarbon cracking plant of Texas Eastman Co. located at Longview, Tex.

from petroleum or from an ethyl alcohol intermediate. Butadiene s always formed during high temperature cracking of liquid hydrocarbons, from which it is readily separated. Although the catalytic treatment of ethyl alcohol was the sole source of butadiene during the war, the oil route is more economical.

Butadiene is used in tremendous tonnage in the manufacture of many varieties of synthetic rubber and latices. It is copolymerized with other monomers, the most common being styrene and acrylonitrile. By means of the Diels-Alder reaction, the diolefins may be condensed with maleic anhydride to form dibasic acids. Carbic or "Nadic" anhydride made from cyclopentadiene and maleic anhydride, and tetrahydrophthalic anhydride from butadiene and maleic anhydride are prime examples.

Naphthenic Chemicals

Naphthenes are saturated cycloparaffins, of which the C– and the C– ring compounds are present in crude petroleum. As much as 15% of cyclohexane is found in some gasolines. Upon oxidation of cyclohexane, a mixture of cyclohexanol and cyclohexanone is obtained. These are excellent solvents as well as the intermediates for manufacturing the dibasic adipic acid.

Naphthenic hydrocarbons are valuable primarily as intermediates for manufacturing nylon, aromatic solvents, and gaseous olefins. But, without modification, they are also important constituents of many petroleum solvents—for example, solvent naphtha and mineral spirits.

Aromatics from Petroleum

Before World War II, coal tar was the sole source of the aromatic solvents such as benzene, toluene and xylene. Normally about 80,000 tons of toluene were produced per year. The war brought a sixfold increase in demand. With the limited output of the coal tar industry, the war effort would have been seriously hampered had the petroleum industry not filled the gap by supplying three quarters of the toluene requirements.

Tremendous quantities of aromatics are used in manufacturing aviation gasoline, TNT, styrene, phenol, maleic anhydride, phthalic anhydride, high strength paint solvents, and lacquer diluents. Since the natural aromatic content of crude petroleum varies from 0—2% of the distillable fractions, national requirements could not be met by simple separations. Manufacturing aromatics is now a major activity of the petroleum industry.

Maleic anhydride is classically derived by a catalytic vapor phase air oxidation of benzene. It may also be made directly from petroleum by the air oxidation of n-butene. Phthalic anhydride is also being made from petroleum sources by the oxidation of ortho xylene. Terephthalic and isophthalic acids are oxidation products of para and meta xylene respectively.

Products from Acetylene

Acetylene is becoming increasingly more and more important as a raw material for the chemical industry. It is normally manufactured from calcium carbide by the action of a high temperature electric arc on lime and coke, (Figure 4).

$$CaO + 3C \rightarrow CaC_2 + CO$$

Figure 4

Carbide manufacture is normally limited to sites where hydroelectric power is freely available to provide low cost power necessary for the high temperature and heat requirements of the reaction.

Of the many acetylene processes studied, the possibility of manufacturing acetylene from petroleum hydrocarbons has been known for a long time. Acetylene can be formed during pyrolysis of hydrocarbons by passage of hydrocarbon gases through an electric arc, or by partial combustion of hydrocarbons. In all the routes to acetylene from petroleum, acetylene is obtained as a dilute gas. Consequently, acetylene must be separated and such methods are usually based upon the high solubility of acetylene in a suitable solvent. For example, acetone dissolves acetylene without dissolving the accompanying hydrogen, methane, ethane, carbon monoxide and carbon dioxide gases.

Acetylene's principal commercial outlets are the manufacture of acetaldehyde, vinyl acetylene, vinyl esters and acetylene black. The chemistry of acetylene has been considerably advanced during the last decade by the work of the Reppe school in Germany.

The newer acetylenic derivatives are introducing hitherto unknown compounds which may eventually become common raw materials in the industry. These include butyndiol, butenediol, butyrolactone, pyrrolidone, vinylpyrrolidone, vinyl ethers, polymethylol benzenes and others.

For example, acetylene condenses with aldehydes and ketones. With formaldehyde, 1,4-butynediol is obtained. During the war, the Germans used it as the intermediate for their butadiene manufacture. Acetylene can be polymerized into monovinylacetylene, the neoprene intermediate, and into divinylacetylene, which possesses definite film forming properties.

Vinylation, the addition of acetylene to compounds containing reactive hydrogen is now used to condense acetylene with alcohols to produce vinyl ethers. Still too new to warrant general use, vinyl ethers are nevertheless potentially useful monomers. Acetylene can be condensed with carbon monoxide in the presence of water to yield large amounts of acrylic acid and its derivatives.

Miscellaneous Intermediates

The manufacture of formaldehyde in the vapor phase air oxidation of paraffins has been discussed earlier. It is made also by the catalytic air oxidation of methyl

alcohol over silver or copper catalysts. The widespread use of formaldehyde in the coating industries has been mentioned.

Acetaldehyde, on the other hand, which is hardly ever used as such, is probably the most important petroleum derived aldehyde. It is the starting point for the manufacture of an immense range of aliphatic chemicals—acids, esters, higher aldehydes, alcohols and many others. Acetaldehyde can be manufactured directly from either ethyl alcohol or acetylene, as a by-product of the Fischer-Tropsch reaction, or from the controlled air oxidation of the lower paraffin gases.

By means of the classic aldol condensation, acetaldehyde may be condensed to n-butanol via crotonaldehyde, (Figure 5).

$$CH_2CHO + CH_3CHO \longrightarrow CH_3CHOHCH_2CHO$$

$$CH_3CH=CH_2CHO + H_2 \longrightarrow CH_3CH_2CH_2CH_2OH$$

Figure 5

It is by this process that the bulk of the synthetic butyl alcohol, butyl acetate and dibutyl phthalate is made. By a continuation of this process the higher alcohols are synthesized; particularly 2-ethyl hexanol from which dioctyl phthalate and trioctyl phosphate are produced.

Acetone is the most important petroleum derived ketone. The main petroleum route to acetone is the oxidation of isopropyl alcohol. Acetone is used not only as a solvent; it also undergoes aldol condensations, resulting in diacetone alcohol, mesityl oxide and isophorone. The invaluable methyl isobutyl ketone is directly derived from acetone.

The most important acidic derivative is acetic acid. Tremendous quantities of this acid are used in the manufacture of cellulose acetate and in the acetic esters such as ethyl and butyl acetate. Acetic acid is primarily made by either directly oxidizing acetaldehyde or by pyrolyzing acetone to ketone and thence to the acid. Butyric acid is made from an acetaldehyde condensation to butyraldehyde which is then oxidized. This acid is primarily used in the manufacture of cellulose acetobutyrate.

In addition to the products manufactured from the hydrocarbons of crude petroleum, there is an interesting series of native oxygenated compounds present in natural crude oil. These compounds—naphthenic acids—are valuable drier intermediates. Naphthenic acids are carboxylic acids of substituted cyclopentanes occurring naturally in the naphthenic crude oils. Certain Russian crudes are reputed to contain naphthenic acids in amounts over one percent. The acids are isolated by extraction with dilute caustic which is then concentrated; the sodium salt is precipitated by salting out and the acid is thus recovered. The acids are dark colored, foul smelling liquids of molecular weights ranging from 180 to 350. These acids are quite complex and only a few have been identified.

The importance of the petrochemical industry to the coatings industries can be best appreciated by considering the variety and quantity of raw materials derived from petroleum. Most of the solvents used by paint manufacturers are derived from petroleum—not only the aliphatic, but also the aromatic high strength solvents. The stronger solvents, such as alcohols, esters, ketones and ether alcohols, are also derived from petroleum.

Many of the preferred plasticizers such as the phthalate esters are petrochemical in origin.

In addition, a substantial number of synthetic resins, such as the cellulose esters and ethers, the multitude of vinyl and acrylic copolymers, phenolics, ureas, epoxys and the many alkyd ingredients are petroleum derived.

Paint latices are almost exclusively petroleum in origin. The monomers, such as styrene, substituted styrenes, vinyl acetate, vinyl chloride, vinyl ethers, the acrylics and methacrylic esters,

Silvery columns of Carbide and Carbon Chemicals Corp. Texas City plant are used for refining ethylene dichloride, a basic ingredient in the production of vinyl resins used in shower curtains, paints, patent leather, records, etc.

are all products of the petrochemical industry.

Many additives such as the driers, surfactants and thickeners are petroleum derived. Even some of the pigments, particularly the carbon blacks, owe their origin to natural gas.

When one considers the tremendous number of changes which have come about in the remarkably brief period since the rise of the petrochemical industry, it seems reasonable to suppose that many more advances will be made as the industry matures. On the other hand, as soon as the coal hydrogenation industry is established, many vital chemicals, such as naphthalene, benzene, phenol, cresols, and anilines, should become increasingly more available. More important, the new industry will introduce a host of new aromatics, such as indanols, methyl naphthalene and the higher homologues of phenol. Of course, the most significant aspect of the new coal hydrogenation process is, as mentioned earlier, that it can produce even the aliphatic chemicals and liquid fuels now made predominantly from petroleum and natural gas.

Almost inevitably, the growth and competition of these two parallel industries will make available so many new intermediates that even today's synthetic finishes may soon become obsolete. In any case, there is certainly abundant evidence to indicate that, for paint chemists at least, the decade ahead will be marvelously active, exciting and rewarding.

ASPHALT ROOFING ALUMINUM PAINT AND ITS EFFECT ON LEAFING

By RAYMOND H. FREDERICK and W. P. WOOSLEY*

THE PURPOSE of these tests was to determine, if possible, those characteristics which contribute to the optimum leafing of an asphalt aluminum roofing paint or coating.

Every effort was made to run all these tests under as nearly uniform conditions as possible. Some allowance should be made for small errors in the specific gravity determinations as these were made with standard hydrometers to three places only. The viscosity was run on a #4 Ford Cup to the nearest second. Due to the characteristics of the various types of dynamic viscosity cups, each has a minimum permissible reading. If they are used below this minimum specified reading, slight inaccuracies are experienced. The #4 Ford Cup minimum specified reading is 23. However, because of the color and nature of asphalt compounds, the #4 Ford Cup was the best method available for measuring viscosity. Small allowances should also be made for the error in stopping and starting the stop watch with the flow from the orifice in the #4 Ford Cup. Slight allowances should be made for the natural error in millimeters reading of "creep"—these being taken with a 153mm metal rule. Asphaltic paints do not give as definite a demarkation where leafing can be measured as do standard varnish paints in that the leafing in an asphaltic paint starts to break showing small holes where leafing has not continued. The leafing or "creep" value was taken in millimeters up to the point where full continuous leafing occurred.

Methods Of Test

"Creep" Method

"Creep"—This test is conducted by placing 45 grams of paste in a one quarter (¼) pint can and adding slowly, with constant stirring, the asphaltic vehicle until the can is full. This corresponds to a paste concentration of 3 pounds of paste per gallon of vehicle for this particular test or two pounds of metallic pigment per gallon. The can is sealed for about five to eight hours or preferably overnight, after which time the paint is agitated or stirred to disperse the pigment evenly and the paint poured into a 100cc Berzelius beaker so that the entire surface inside the beaker from the top down is wetted with the mixed paint. After the inside of the beaker has been completely coated, the beaker should be held in an inverted position for 20 seconds. The beaker is then placed at rest in a room where the temperature is approximately 80°F and free from drafts, and allowed to stand until all leafing up the sides of the beaker has ceased—usually a period of about 30 minutes. The distance from the top of the liquid remaining in the beaker to the first break in the leafing film on the side of the beaker is measured in mm. and this is known by the term

Table 1

Effect Of Different Thinners On A Straight Asphalt Base

Asphaltic Vehicle Specific Gravity @ 80°F	Asphaltic Paint Creep in mm
Viscosity 11-15 seconds	
0.820	20
0.835	23
0.843	26
0.848	30
0.858	33
0.870	38
0.880	45
0.888	53
0.892	53
0.898	53
Viscosity 16-20 seconds	
0.865	23
0.878	30
0.880	32
0.888	42
0.896	48
0.906	56
Viscosity 21-25 seconds	
0.890	22
0.895	29
0.901	35
0.906	45
0.910	52
Viscosity 26-30 seconds	
0.890	25
0.895	26
0.900	28
0.904	31
0.912	35

*Raymond H. Frederick and W. P. Woosley are associated with the Pigment Division, Reynolds Metals Company, Louisville, Ky.

"creep". An approximate percentage of leafing can be determined by dividing this "creep" by the total height of the beaker and multiplying by 100.

Specific Gravity

A hydrometer of the proper range (a set covering from 0.800 to 1.00 will apply to most vehicles) is placed in a cylinder of sufficient depth which has been filled to within approximately one inch of the top with the vehicle to be tested. All tests were conducted in a room with a temperature of 80°F. The temperature of the vehicle during this test was 80°F.

Asphalts Tested

To show the effect of different thinners on the physical characteristics of a definite asphalt with the concurrent effects on leafing, a commercial asphaltic base with 64% solids was used and this base was reduced using such thinners or blends of thinners as was necessary to give the desired range in specific gravity and viscosity. This data was assembled in Table No. 1 and plotted on graphs No. 1, 2, 3 and 4. This information is given to show that for a definite base, the same relationship exists for asphaltic vehicles as it does for oleo-resinous vehicles in the effect of viscosity and specific gravity on the leafing of aluminum. However, when the asphalt base is varied, the data obtained may not fall on the plotted curves since too many variables are introduced between two or three different asphalt bases. For instance, a 60% gilsonite—40% fish oil vehicle does not perform exactly the same as a straight steam refined asphalt or a straight blown asphalt. This partially is due to the fact that the viscosity of an asphalt reduces faster than does that of a gilsonite and also to the fact that a blown asphalt has better wetting properties than a steam refined asphalt. Because of these properties of different bases used in asphaltic vehicles, a series of tests were conducted to show the effects of reducing four materials, each composed of a different base with the same solvents. These four materials, each composed of a different base with the same solvents. These four materials were reduced to 45% solids and the data obtained is shown in Tables No. 2, 3, 4, and 5. As has been explained previously, this data cannot be located on graphs plotted (Nos. 1-4), page 31, for the differences noted.

The asphaltic bases used in the different tests were of the type or types which had previously been determined as satisfactory for roofing application, and also stable as far as ready mixed leafing is concerned. An explanatory list of the equipment used to evaluate both the asphalts and the asphaltic paints follows:

Pigment Used

The pigment used was Reynolds 3A aluminum paste. All tests of leafing and "creep" were made at the rate of 45 grams of paste in a ¼ pint can of vehicle. This corresponds to a paste concentration of 3 pounds of the paste per gallon of vehicle, or to a metal pigment concentration of 2 pounds per gallon.

Apparatus Used

#4 Ford Cup, Graduated Cylinder (1 to 50cc), Hydrometers, 100cc Berzelius beaker (without lip).

Asphalt aluminum paint prepared from 80% Steam Refined Asphalt-20% Gilsonite Base

Gilsonite	Steam Refined Asphalt
1. Melt Point: 275-285°F	1. Melt Point: 125-130°F
2. Solids: 50%	2. Solids 84%
3. Weight/gallon 7.33	3. Weight/gallon 8.05

FORMULATION:	Weight	Solids	Solvent	Gallon
Asphalt	238 lbs.	200 lbs.	38 pounds	29.6
Gilsonite	100	50	50 pounds	13.6
Solvent	217		205 pounds	33.4
	555 lbs.	250 lbs.	293 pounds	76.6

Solids: 45%
Pigment 3 pounds per gallon with Reynolds No. 3A paste

SOLVENT	VISCOSITY	SPECIFIC GRAVITY	LEAFING CREEP VALUE MM
Mineral Spirits	13.4	0.855	28
Coal Tar High Flash Naphtha	13.2	0.875	30
Xylol	12.6	0.873	32
80% Mineral Spirits-20% Xylol	13.2	0.869	32
Special Thinner #1	13.8	0.876	36
Special Thinner #2	14.4	0.889	32
Special Thinner #3	13.2	0.872	33
Special Thinner #4	13.2	0.869	32
Carbon Tetrachloride	16.2	1.010	22
Petroleum Ether	11.4	0.805	10

Table 2

Table 3

Asphalt aluminum paint prepared from 60% Gilsonite-40% Fish Oil Base

Gilsonite	Light Fish Oil
Melt Point: 275-285°F	Solids: 100%
Solids: 50%	Weight/gal. 7.95

FORMULATION	WEIGHT	SOLIDS	SOLVENT	GALLON
Gilsonite	120 lbs.	60 lbs.	60 lbs.	8.20
Light Fish Oil	40	40		5.92
Solvent	62		62	1.43
Drier	0.47			
	222.47lbs.	100 LBS.	122 lbs.	15.55

Solids: 45%
Pigment 3 pounds per gallon with Reynolds No. 3A paste

SOLVENT	VISCOSITY sec.	SPECIFIC GRAVITY	LEAFING CREEP VALUE mm
Mineral Spirits	15.0	0.876	25
Coal Tar High Flash Naphtha	13.8	0.905	30
Xylol	12.6	9.904	27
80% Mineral Spirits-20% Xylol	13.8	0.880	25
Special Thinner #1	15.6	0.907	35
Special Thinner #2	16.2	0.910	30
Special Thinner #3	14.4	0.905	28
Special Thinner #4	13.8	0.896	30
Carbon Tetrachloride	21.0	1.085	23
Petroleum Ether	11.4	0.806	11

Asphalt aluminum paint prepared from
Straight Steam Refined Asphalt Base

Steam Refined Asphalt:

1. Melt Point: 125-130°F
2. Solids: 84%
3. Weight/Gal. 8.05

FORMULATION	WEIGHT	SOLIDS	SOLVENTS	GALLONS
Steam Refined Asphalt	450 lbs.	378 lbs.	72 lbs.	55.9
Solvent	380		380 lbs.	58.4
	830 lbs.	378 lbs.	452 lbs.	114.3

Solids: 45%

Pigment 3 pounds per gallon with Reynolds #3A paste

SOLVENTS	VISCOSITY	SPECIFIC GRAVITY	LEAFING CREEP VALUE mm
Mineral Spirits	13.2	0.876	25
Coal Tar High Flash Naphtha	12.0	0.918	34
Xylol	12.0	0.912	32
80% Mineral Spirits-20% xylol	13.2	0.884	26
Special Thinner #1	14.4	0.916	37
Special Thinner #2	14.4	0.916	34
Special Thinner #3	13.2	0.910	32
Special Thinner #4	15.0	0.912	32
Carbon Tetrachloride	19.2	1.155	20
Petroleum Ether	10.8	0.792	6

Table 4

Table 5

ASPHALT ALUMINUM PAINT PREPARED FROM
BLOWN ASPHALT BASE

Blown Asphalt

1. Melt Point 210-224°F.
2. Solids 64%

FORMULATION	WEIGHT	SOLIDS	SOLVENT	GALLONS
Blown Asphalt	450 lbs.	285 lbs.	162 lbs.	64.3 lbs.
Solvent	190 lbs.		190 lbs.	29.2 lbs.
	640 lbs.	285 lbs.	352 lbs.	93.5 lbs.

Solids: 45%

Pigment 3 pounds per gallon with Reynolds #3A Paste

SOLVENTS	VISCOSITY	SPECIFIC GRAVITY	LEAFING CREEP VALUE mm
Mineral Spirits	16.2	0.862	25
Coal Tar High Flash Naphtha	13.8	0.880	30
Xylol	13.2	0.882	25
80% Mineral Spirits-20% Xylol	16.2	0.866	27
Special Thinner #1	15.6	0.882	36
Special Thinner #2	16.2	0.884	34
Special Thinner #3	15.0	0.880	33
Special Thinner #4	15.0	0.876	29
Carbon Tetrachloride	21.8	1.025	23
Petroleum Ether	19.8	0.802	10

While some constants may be determined by comparing the surface tension of vehicles to percentages of leafing and "creep", the tensometers required for such tests are not found in the medium sized plant. Surface tension tests were therefore omitted, as it was desired to conduct the tests in a method which could be easily duplicated and substantiated in the usual control laboratory. Readings of Specific Gravity were taken when the hydrometer rested at equilibrium in the asphaltic vehicle.

Viscosity

The Ford Cup with Orifice No. 4 was used in all tests with a temperature of 80°F. The orifice of the cup was closed by placing the index finger of the left hand under the orifice and the cup was filled to overflowing with asphaltic vehicle. The cup was leveled off with a metal strip. The finger closing the orifice was then removed and a stop watch started simultaneously. The stop watch was stopped at the first evidence of break in the stream through the orifice. Reading was taken in tenths of a minute and calculated in seconds.

Asphaltic Vehicles

Non-Volatile Content: This value is determined by heating a 2-5 gram sample at 325°F. for three hours. A solids content between 43-46% asphaltic base has been found to give the best results. In this range the vehicle should have the right viscosity and specific gravity to give the optimum amount of leafing.

Viscosity: This value is determined by use of a #4 Ford Cup and the range found to give the highest leafing was 15-20 seconds. In this range the vehicle has enough body to give a good film but still fluid enough to allow the aluminum to leaf to the surface.

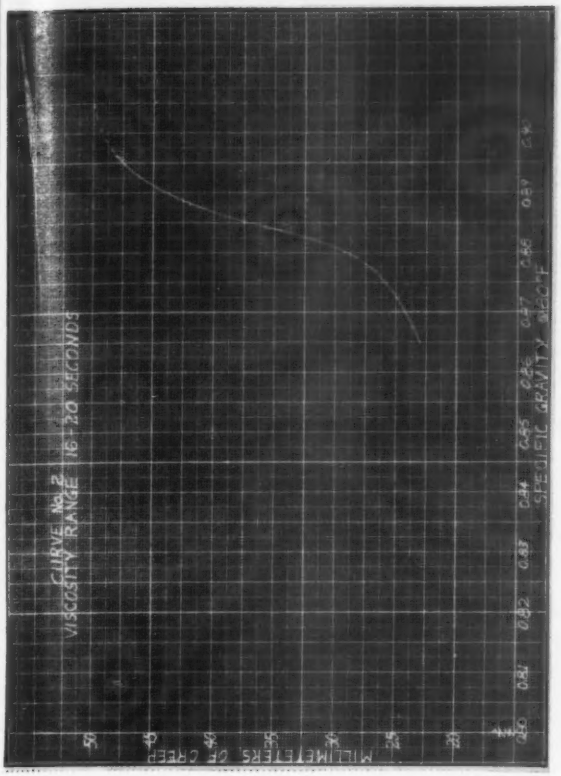
Specific Gravity: A minimum of 0.860 has been recommended, since below this value the vehicle does not seem to have the buoyancy required to make the aluminum leaf to the surface.

Asphaltic Paint

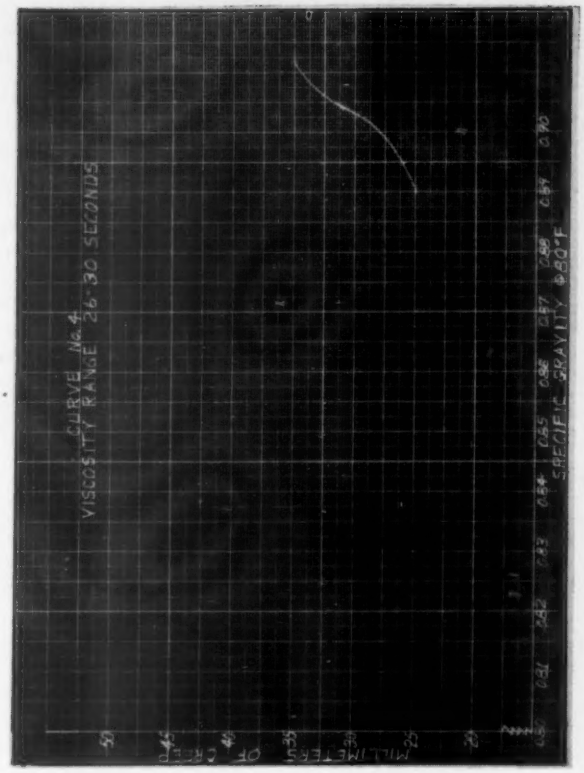
Oven Stability (Accelerated) The accelerated stability of a paint is determined by holding the paint at 54°C for one week (7 days). The paint must not show any loss of leafing in this time. This has been found to be the best test so far in predicting the ready-mix can stability.

Hot Flow Test: The hot flow test measures the resistance of the coating to flow at elevated temperatures since it simulates the conditions of a steep metal roof on a very hot day. A tin plate panel is coated at the rate of 300 square feet per gallon and allowed to air dry for one hour, then dried in a horizontal position for 3 hours at 130°F and then placed in a nearly vertical position for four hours at the same temperature. The coating must not show any signs of sagging or flowing.

Cold Mandrel Test—The purpose of this test is to measure the brittleness of an asphaltic paint at winter temperature. The coating is applied to a tin plate panel at the rate of 300 square feet per gallon coverage. The panel is heated at 140°F for 4 hours, cooled to room temperature and placed in the refrigerator at 32°F for one hour.



Curve 2



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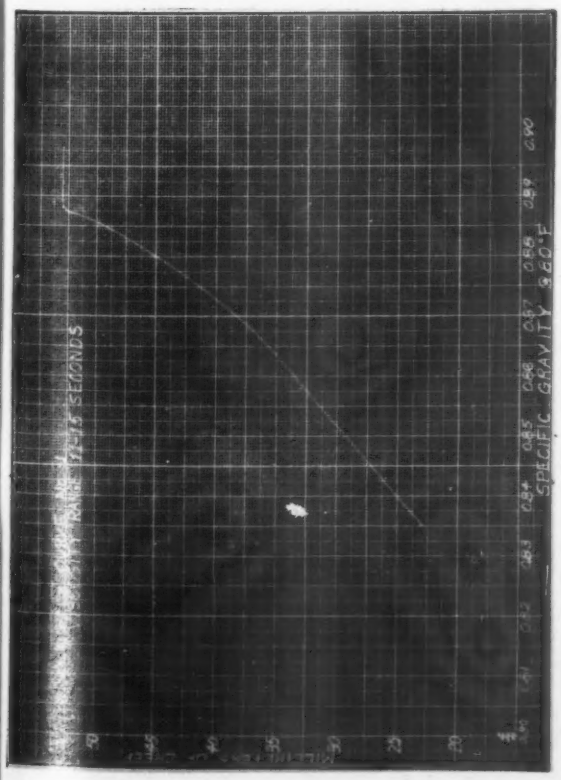
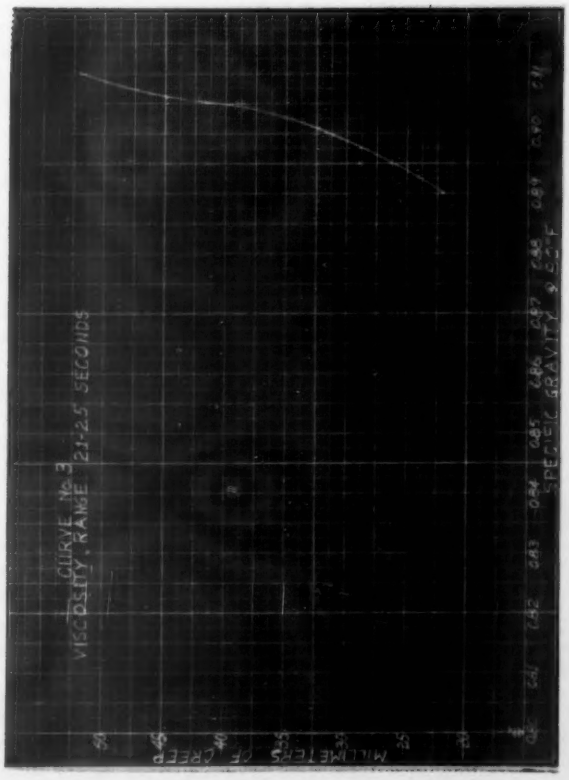


Curve 1



Curve 3

The panel is removed and immediately bent over a 3/16 inch mandrel. Any signs of cracking indicate failure. The above should also be repeated on a 1/8 inch mandrel to give more information as to the flexibility of the coating.

Formulation of Asphaltic Vehicles

A straight steam refined asphalt with a softening point of 115-120°F has proved too soft to use as a base for an asphalt vehicle in that in warmer climates the asphalt coating tends to alligator.

At the other extreme is the straight gilsonite select base with a melting point of 275-285°F. The gilsonite base can be formulated to perform satisfactory in warmer climates, but in colder sections of the country becomes brittle and causes the paint film to crack.

To obtain the softness and plasticity required in cold weather, and to obtain the hardness needed to prevent flowing in hot weather, a blend of steam refined asphalt and gilsonite selects may be made. This blend should have a minimum softening point of 165°-175°F and should also have the hardness necessary to pass the hot flow test and the plasticity to pass the cold mandrel test. On the other hand stable asphaltic compounds, possessing the requisite elasticity in their dry films without the necessity of a blending operation, are available.

Another example of stabilizing an asphalt for cold weather conditions is to add an oil to act as a plasticizer. The solids of such a vehicle would be composed roughly of 60% gilsonite and 40% oil. This would correspond to an 8 gal. oil with the brittleness in cold weather but still leave it hard enough to do away with the brittleness in cold weather but still leave it hard enough to stay firmly in place in hot weather. Gilsonite Selects and Kettle-bodied Fish Oils are the raw materials used for preparing this formulation.

Most concentrated gilsonite solutions have a harmful effect on the leafing of aluminum. However, the blend of 80% steam refined asphalt—20% gilsonite has good ready mix stability with aluminum as does the 60% gilsonite—40% fish oil blend. Both of the above blends retain their leafing when used with aluminum on the accelerated oven stability test explained previously.

Explanation of Curves

Curve No. 1 In the viscosity range of 11-15 seconds on a #4 Ford Cup, it can be seen that as the specific gravity increases, the leafing increases steadily until at approximately 0.89 specific gravity the leafing approaches completeness and the curve levels off.

Curve No. 2 In the viscosity range of 16-20 seconds on a #4 Ford Cup, the specific gravity has to be increased to 0.86 to obtain the same amount of leafing in a vehicle with a viscosity range of 11-15 seconds which has a specific gravity of 0.835. The leafing increases faster in this viscosity range as the specific gravity increases until at approximately 0.90 specific gravity, leafing approaches completeness and the curve starts leveling off.

Curve No. 3 To obtain the same leafing as viscosity range of 11-15 seconds in the viscosity range of 21-25 seconds, the specific gravity has to be increased from 0.84 to 0.89. As the specific gravity is increased in this viscosity range, the leafing increases more rapidly than in the lower ranges. It was impossible to obtain a high enough specific gravity to get complete leafing.

Curve No. 4 As the viscosity range increased up to this point the amount of leafing has increased steadily at a fairly rapid rate as the specific gravity increased. However, the vehicle can become ro viscous that it will hinder and setard leafing even when the specific gravity is increased. This appears to be shown in Curve #4 showing the 26-30 second viscosity range. At 0.89 specific gravity there was a 25mm. creep and at 0.91 specific gravity there was only a 35mm. creep.

Example Of Explanation Of Curves

To obtain a 30mm. creep in the various viscosity ranges, the following specific gravity was needed:

Viscosity range	*Specific Gravity*
11-15 seconds	0.855
16-20 seconds	0.878
21-25 seconds	0.897
26-30 seconds	0.904

Conclusion

1. It is readily apparent from the curves plotted that the leafing power has a much greater range in the 11-15 second and the 15-20 second viscosities than in the 21-25 seconds and 26-30 second viscosities. The leafing power of a vehicle is affected by changes of specific gravity within the lower viscosities much greater than in the higher viscosities.

From these curves it can be seen that an asphaltic vehicle should have the following characteristics to give optimum leafing:

Viscosity	*Specific Gravity*
11-15 seconds	minimum of 0.88
16-20 seconds	minimum of 0.895

Above 20 seconds a loss of leafing is experienced within the specific gravity of 0.80 to 0.91.

Different Asphalt Bases Reduced With Same Thinners

2. It can be seen from Table No. 2 that if an asphalt aluminum paint is prepared from a 80% steam refined asphalt—20% gilsonite base, the use of straight mineral spirits to bring the solids to 45% results in a specific gravity of 0.855 with a creep of 30mm. By checking further on Table No. 2, it can be seen that if an aromatic petroleum solvent, such as Special Thinner #1 is substituted for the mineral spirits, the extra solvency results in an increase in the specific gravity to 0.876 and a resultant increase in the leafing (an increase in the "creep" value of 6mm.)

3. Referring to Table No. 3 the same can be seen when an asphalt aluminum paint is made from a 60% gilsonite—40% fish oil base. When mineral spirits is used to bring the solids to 45%, the resultant specific gravity is 0.876 and a "creep" value of 25mm. whereas, when Special Thinner #1 is substituted as the reducing thinner, the specific gravity is increased to 0.907 with a resultant increase in the "creep" value (leafing) of 10mm.

4. An even more pronounced difference is noted in Table No. 4 where the substitution of Special Thinner #1 for mineral spirits as the reducing thinner of a straight steam refined asphalt base aluminum paint increases the specific gravity from 0.876 to 0.916 with a resultant increase in leafing as shown by the increase of 12mm. in "creep" value.

5. The same effect is shown in Table No. 5 where a blown asphalt is used as the base for an asphalt

aluminum paint. When the base is reduced to 45% with straight mineral spirits, a specific gravity of 0.862 is obtained with a "creep" value of 25mm. However, when Special Thinner #1 is substituted, the specific gravity is increased to 0.882 with a "creep" value of 56mm. or an increase in creep value of 11mm.

6. The effect of solvents on the three prime factors in an asphalt aluminum paint-viscosity, specific gravity and leafing was evaluated numerically for each of the asphalt bases tested. It can be seen from Table No. 6 that when the three special thinners (all high specific gravity, high solvency) and coal tar high flash naphtha are used as solvents in the asphaltic vehicles a higher leafing or "creep" value is obtained. Table No. 7 shows that xylol when used as thinner in the asphaltic vehicles has the greatest solvency giving the lowest viscosity with the coal tar high flash naphtha thinner rating second. Table No. 8 shows that Special Thinners #2 and #3 and Coal Tar High Flash Naphtha have the greatest effect on viscosity when used as thinner for the asphaltic bases.

Table No. 9 shows the effect of the solvents on the three prime factors-viscosity, specific gravity and leafing, with the following rating for thinners to use in asphaltic vehicles:

First	Coal Tar High Flash Naphtha and Special Thinner #1
Second	Xylol and Special Thinner #2
Third	Special Thinner #3
Fourth	80-20 blend mineral spirits and Xylol
Fifth	mineral spirits

7. Thus it can be concluded that the use of a high solvency, high specific gravity thinner in reducing the asphalt base for an asphalt aluminum paint results in a better leafing product and a better paint film.

8. As with oleo-resinous varnishes, the higher the specific gravity and the lower the viscosity, combined with the proper evaporation rate, the better will be the leafing of an aluminum asphalt roof-coating vehicle.

Evaluation of Effect of Solvents on leafing using different asphaltic bases

SOLVENTS	EVALUATION FROM TABLE NO. 2	3	4	5	RATING BY AVERAGE NUMERICAL EVALUATION
Mineral Spirits	5	5	5	8	8
Coal Tar High Flash Naphtha	4	2	2	4	4
Xylol	3	4	3	6	6
80% Mineral Spirits-20% Xylol	3	5	4	7	7
Special Thinner #1	1	1	1	1	1
Special Thinner #2	3	2	2	2	2
Special Thinner #3	2	3	3	3	3
Special Thinner #4	3	2	3	5	5
Carbon Tetrachloride	6	6	6	9	9
Petroleum Ether	7	7	7	10	10

Table 6

Evaluation of Effect of Solvents on Viscosity Using Different Asphaltic Bases

SOLVENTS	EVALUATION FROM TABLE NO. 2	3	4	5	RATING BY AVERAGE NUMERICAL EVALUATION
Mineral Spirits	4	5	3	5	6
Coal Tar High Flash Naphtha	3	3	2	2	3
Xylol	2	2	2	1	1
80% Mineral Spirits-20% Xylol	3	3	3	5	5
Special Thinner #1	5	6	4	4	7
Special Thinner #2	6	7	4	5	8
Special Thinner #3	3	4	3	3	4
Special Thinner #4	3	3	5	3	5
Carbon Tetrachloride	7	8	6	7	9
Petroleum Ether	1	1	1	6	2

Table 7

Evaluation of Effect of Solvents on Specific Gravity using different asphaltic bases

SOLVENTS	EVALUATION FROM TABLE NO. 2	3	4	5	RATING BY AVERAGE NUMERICAL EVALUATION
Mineral Spirits	2	2	2	2	9
Coal Tar High Flash Naphtha	6	6	7	5	4
Xylol	5	5	5	6	5
80% Mineral Spirits-20% Xylol	3	3	3	3	8
Special Thinner #1	7	7	6	6	3
Special Thinner #2	8	8	6	7	2
Special Thinner #3	4	6	4	5	6
Special Thinner #4	3	4	5	4	7
Carbon Tetrachloride	9	9	8	8	1
Petroleum Ether	1	1	1	1	10

Table 8

Evaluation Of Effect Of Solvents On All Three Properties Leafing—Specific Gravity—Viscosity Using Different Asphaltic Bases

Solvents	Leafing Creep mm	Specific Gravity	Viscosity sec	Rating By Average Numerical Eval.
Mineral Spirits	8	9	6	8
Coal Tar High Flash Naphtha	4	4	3	1
Xylol	6	5	1	2
80 % Mineral Spirits-20% Xylol	7	8	5	6
Special Thinner #1	1	3	7	1
Special Thinner #2	2	2	8	2
Special Thinner #3	3	6	4	3
Special Thinner #4	5	7	5	4
Carbon Tetrachloride	9	1	9	5
Petroleum Ether	10	10	2	7

NOTE:

Carbon Tetrachloride and Petroleum Ether were included in this test merely for theoretical purposes and could not be used in actual practice because of their high volatility. At the same time Petroleum Ether is a fire hazard and Carbon Tetrachloride is a health hazard.

Table 9

DEVOE & RAYNOLDS MALDEN PLANT BOOSTS PRODUCTION WITH NEW EQUIPMENT

THE Devoe & Raynolds Company, Malden, Massachusetts Plant, manufacturers of a complete Trade Sales line of paints and enamels, presents a solution to the problem of increasing plant output by the installation of improved processing, filling and handling equipment. This plant, with a minimum of additional building construction, at this location is able to satisfactorily produce and service the combined output of two former units, one previously located in Brooklyn, New York which was consolidated with their existing Malden plant, several years ago.

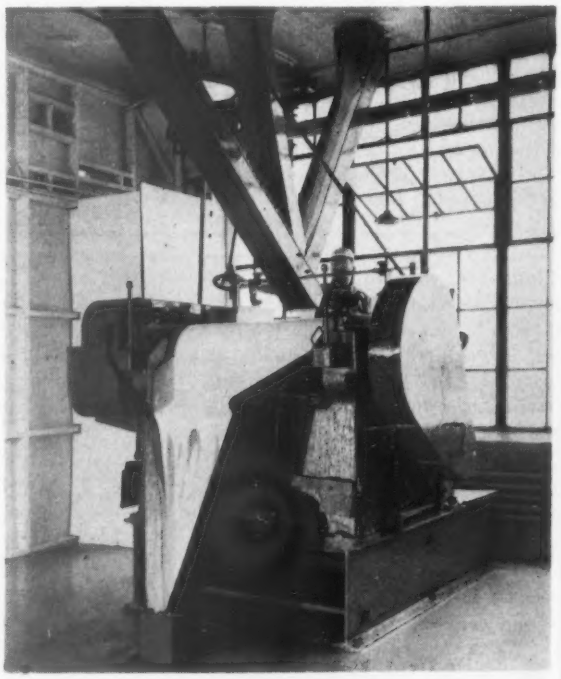
When the consolidation of these plants was under consideration, management planned and set up a program whereby improved methods and equipment would be added from time to time. The present plant reflects the results of their foresight. By constructing a new finished goods warehouse, together with a shipping and receiving building containing approximately 14,000 square feet, the Malden plant's increased volume has been successfully handled in a considerably smaller square foot area than the combined total that both plants needed before consolidation.

Increased production was accomplished by the installation of several larger capacity paste mixers of 150 to 200 gallon capacity, to the normal size 60 to 80 gallon mixers, which were in operation at Malden. A comprehensive vehicle system of pipe lines, pumping equipment (operated manually or by remote control) permits oils, thinners, tank car or tank truck shipments of manufacturing vehicles to be pumped into large storage tanks; subsequently these vehicles are mechanically distributed throughout the manufacturing departments.

In the roller mill department, the following units were installed: 1-16″ x 40″ three roller high speed mill, 3-13″ x 32″ three roller high speed mills and 2-13″ x 32″ five roller mills making a total of six roller mills, which replace the older style milling equipment. Four improved pebble and ball mills were added to the existing mills of this description, which were already in the plant bringing the total of such mills to 10; capacities run from 65 gallons, 275, 500 to a maximum of 1000 gallons.

In the thinning and tinting departments 12-1,000 gallon tanks and 6-2000 gallons, direct motorized storage or filling tanks, rectangular in shape, as designed by the company's own engineers, were installed. These large tanks were in addition to tankage already in use.

The filling and label department was equipped with one large filling machine, together with roller closing devices, conveyors, and carton closing machines



16 x 40 high speed roller mill

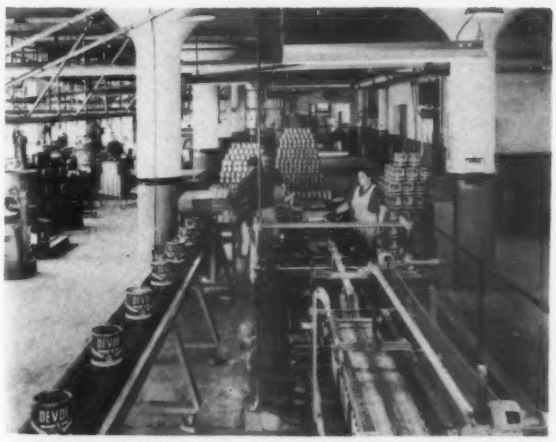
Vehicle system of pipe lines and pumping equipment

2,000 gallon storage or filling tank

200 gallon paste mixers, scale, and vehicle work tanks

[Pebble" and ball milling operations

This operation is concerned with filling ■



Coveyorized can-closing and labeling operations

Laboratory technicians making control tests

where gallon and quarter gallon cans are filled, closed, cartoned and by conveyor sent down to the stock storage or shipping departments. In addition, two portable filling units are used for small can operations. These machines are used in conjunction with a conveyor, closing device, but in this case cartons are hand packed and sealed, placed on pallets on skids, and subsequently moved by electric transporters or pallet trucks to the stock, storage or shipping departments.

Raw materials in bags or drums, finished stock to storage or for shipment are handled to the major extent with the aid of pallet trucks or palletizers.

This firm has found that standardization of equipment permits quick maintenance and a minimum of spare parts inventory in their stock room supply. It has consistently followed out a standardization program in installations of roller mills, filling machines, and material handling equipment.

N Y U OPENS NEW SURFACE TECHNOLOGY LAB

Dr. Max Kronstein and staff. Left to Right: M. Goldstein, L. Russo, A. Staheli, M. Kronstein, N. Stoloff, I. Miller.

TO PROVIDE adequate facilities for its expanding program of basic research in the field of surface technology, the Research Division of New York University's College of Engineering has recently established a new Surface Technology Laboratory located in Engineering Research Building No. 2, 401 W. 205th St. in Manhattan.

According to Dr. Harold K. Work, Director Research Division, the investigations in the coatings field during the last eight years reflect the trend to development of systematic research and evaluation methods relating to preparation of surfaces before treatment and to the application of finishes. Surface technology thus includes inorganic and organic treatments, technical processes, and laboratory procedures and suggests development into a new field of engineering. While relating to the processes of chemical and mechanical engineering, it also employs the evaluation methods of physics and aims at the systematic development of electrical engineering production involved in surface technology.[1]

In addition to its studies in surface treatments and development and application of organic finishes, the Research Division has introduced several new methods for the evaluation of coating systems. For example, Dr. Max Kronstein, who directs the surface technology program, developed the electrographic printing method.[2] This gives investigators permanent records of the permeability of organic films on steel and of the spreading of moisture under salt fog exposure. The method has been particularly useful in the development of tough coatings for aluminum and magnesium.

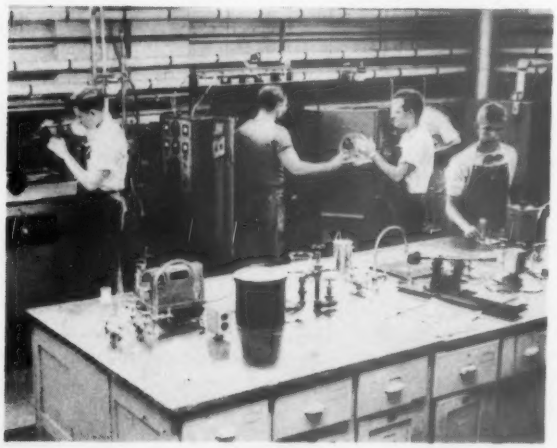
In another study the research staff devised a means of determining the required coating thickness for the various surface profiles of metals.[3] The method was found to be applicable not only to sandblasted and gritblasted surfaces but also to steel and light metals that are processed with such chemical treatments as iron and zinc phosphates.

The range of surface technology research has extended from fundamental studies to immediately applicable developments. A continuing study focuses interest on the influence of the particle shape of pigments on the final coating, particularly on the platy shape of paints that must be exposed to moisture.[4] An extension of the investigation is the development of a new photographic method for the study of film formation in various latex paints popular for household as well as industrial uses.[5]

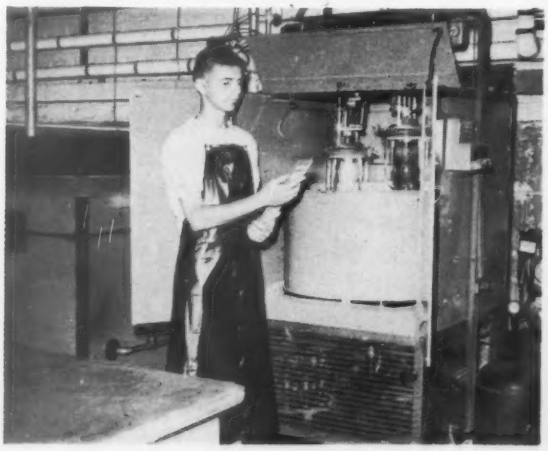
In another study, the effect of lecithin on the dispersion of titanium dioxide in latex paints was investigated. This study was particularly concerned with the effect of lecithin viscosity and the stability of this viscosity during storage.[6]

Along with the extension of quarters, the surface technology group has acquired new equipment and

General view of the new surface technology laboratory.



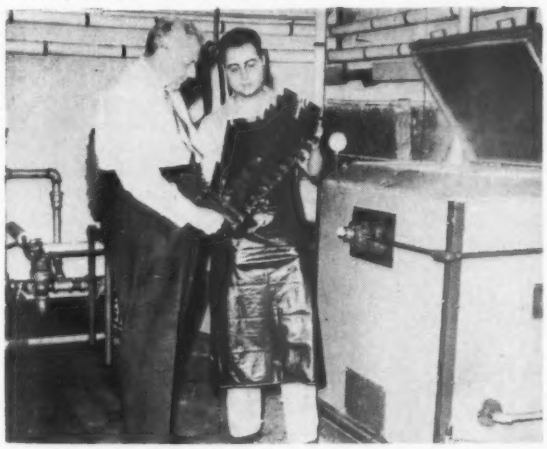
Inspecting test panels after exposure in Weather-o-meter.



Laboratory technicians making pH measurements.

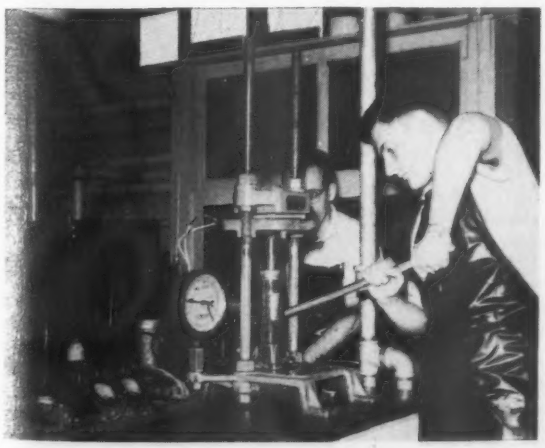
facilities. Among the devices for research are a steam exposure chamber and salt fog chamber for testing organic coatings, paint mills, a spray chamber, and

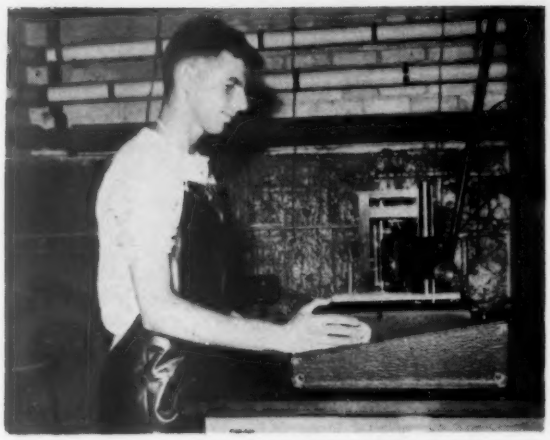
Dr. Max Kronstein and laboratory technician inspect panels for any film breakdown after exposure in salt spray cabinet.



a weather-o-meter that accelerates results on coating systems tested for behavior under extended exposure to weather.

An electrographic print of a test panel after exposure to moisture and salt fog is being made by these technicians.





Brush analyzer test being observed by technician.

The degree of water solubility remaining in an applied pre-treatment or system is an important clue to the future life of a coating system.[7] One new development permits measurement by electrical methods of the water solubility of a system under exposure to moisture, salt fog, and other conditions. Other instruments measure the thickness of organic film on metal bases and record the surface profile of metal-deposit treated surfaces.

Dr. Kronstein's staff has increased fivefold in size during the last two years. With these new facilities, Dr. Kronstein feels that his laboratory is now in a position to expand its program of study of problems in the development of coating systems, chemical processes in the application and curing of organic coatings, and evaluation of organic coatings using different pre-treatments as substrata.

References

1. Electrical Manufacturing, Dec. 1949.
2. Industrial and Engineering Chemistry, Vol. 46, p. 1568 (Aug. 1950)
3. Chemical Engineering, June 1952.
4. Paint and Varnish Production, Vol. 42, No. 2 (Feb. 1952) and Vol. 43, No. 5, May 1953.
5. ACS Div. of Paint, Plastics and Printing Ink Chemistry Preprint, Vol. 14, No. 1, p. 32.
6. Paint and Varnish Production, Vol. 44, No. 5 (May 1954).
7. Paint and Varnish Production, Vol. 42, No. 12 (Dec. 1952) and Vol. 43, No. 12 (Dec. 1953).

This laboratory mill is used to grind small sample batches of experimental coatings which will undergo further tests.

Henry F. Payne and Wife Vacationing in British Isles

On July 6th Mr. and Mrs. Henry F. Payne left New York City on the S. S. Mauretania for an extended holiday in the British Isles.

Mr. Payne is the well known editor of "For Instance" published by the American Cyanamid Co., and since 1945 has also been adjunct Professor at the Brooklyn Polytechnic Institute in charge of the courses on Organic Coating Technology. He is the author of a number of scientific papers as well as a number of textbooks on Organic Coating Technology. In addition to these activities, Henry has been an active member of the New York Paint and Varnish Production Club especially on the Technical Committee and the Mattiello Memorial Committee.

He was born in Bristol, England in 1895 arriving in Canada at the age of 12 and in New York City at the age of 25. Therefore, he and Mrs. Payne will be visiting his birthplace as well as Ireland and Scotland during this month visit. Both have a hobby of collecting rare specimens of ceramics and hope to add to their collection during this trip.

The pleasantly surprised couple were seen off by W. E. Santoro, president and William J. Greco and Sidney B. Levinson of the New York Production Club.

•

Neville Establishes Mass. Warehouse

Neville Chemical Company recently has established new warehousing facilities at Mystic Warehouse and Distributing Company in Medford, Massachusetts. This warehouse will be used for storage of Neville resins, plasticizing oils, and other chemicals and for their distribution throughout the New England area.

The Detroit Paint and Varnish Prodcution Club presented the paint industry "Bible" to Wayne University in memory of the late Charles T. Ellis, quality control manager of the paint and artificial leather plant of Ford Motor Co. The book, "Physical and Chemical Examination of Paints, Varnishes, Lacquers, Colors, was presented to Mel Gerson, successor to Mr. Ellis, who accepted the presentation on behalf of the University. Left to right are. W. E. Rasinen C. L. Wallace, M. M. Gerson, and J. P. Rutsey, all of the Ford Motor Co. and members of Club,

L. Roon Elected President of Preservatives Institute

The technical research committee of the Naphthenate Preservatives Institute, a newly formed trade association, has initiated work of developing standardized methods for analyzing both solution strengths and impregnations to facilitate farm and home applications.

At a recent meeting of the institute in Washington, the committee started preparing standard NPI methods or analyzing strengths of copper naphthenate solutions and for copper as copper naphthenate in order to insure protection against destruction by termites and decay.

The committee also reviewed the results of new accelerated tests which confirm older trials and experience indicating that the use of naphthenate preservatives can greatly extend the service life of fence posts, farm buildings, outdoor furniture, porch floors, steps, etc.

This new trade association consists of firms manufacturing or marketing naphthenate preservatives under the "Prenap" trade name. Its main function is to foster research, compile, and disseminate pertinent technical data, and develop use recommendations.

President of the Institute is Leo Roon of Nuodex Products, Inc., The remaining officers are: W. W. Harris of Harshaw, vice-president, E. M. Pflueger of Naftone, treasurer, A. B. Mullaly of Advance Solvents and Chemical Corp., secretary. Executive Secretary is R. F. Martin, 931 Washington Bldg., Washington.

J. M. Granowitz Receives Nuodex Award for Excellence at NYU

The 1954 Nuodex Award for outstanding graduate scholarship in surface finishes at New York University's College of Engineering has been presented to Jack M. Granowitz of 116 Haseco Avenue, Port Chester, New York.

Mr. Granowitz, who received his bachelor's degree in chemical engineering from NYU in 1953, is presently studying for his master's degree. He is employed by Standard Toch Chemicals, Inc.

The award, given annually by the Nuodex Products Company, Inc., consists of a five-volume standard reference on protective and decorative coatings.

•

Du Pont to Double Production of "Teflon"

Du Pont has announced a project to expand facilities for the manufacture of "Teflon" tetrafluoroethylene resin. It will about double present capacity for making "Teflon" at the company's Washington Works near Parkersburg, W. Va.

Erection of new facilities will be started this summer as an addition to the Washington Works unit with which Du Pont began the first commercial-scale manufacture of "Teflon" in 1950.

The decision to expand, Du Pont said, reflects a steady rise in sales of "Teflon" and the company's confidence in its future growth as new applications for the plastic continue to be found where its remarkable heat and chemical resistance and its efficiency as electrical insulation are filling needs before thought possible with a plastic material

Devoe Dealers and Salesmen Hear Dr. J. S. Long at N. Y. Meeting

Condensation of moisture within a home from water used for cleaning and other household purposes contributes greatly to peeling of exterior wall paints and decay of the house structure, according to Dr. James S. Long, Chemical Director of Devoe & Raynolds Company, Inc. He spoke at a recent meeting of Devoe dealers and salesmen devoted to methods of better surface preservation through correct use of paints. The meeting was held at the Hotel Ambassador, New York City.

Eugene O'Callaghan, local district representative, introduced Dr. Long.

Another major problem in home maintenance receiving increasing attention from paint researchists is damage inflicted on house paints by mildew, Dr. Long said. The speaker was recently awarded the 1954 gold medal of American Institute of Chemists for his achievements as a paint scientist.

In earlier years, Dr. Long pointed out, rain and snow were recognized as the most serious causes of exterior paint peeling. But recent research shows that moisture accumulating within a house is a more powerful agent bringing about deterioration of exterior paint.

Nowadays, he noted, a family of four persons uses enough water for personal and household hygiene, laundering and cooking purposes to produce about eleven gallons of vapor a day. The vapor tries to escape from the house, and, in doing so, condenses on walls, ceilings and rafters, accelerating their deterioration. Modern insulation so widely used in house walls contributes greatly to the inability of moisture to escape readily from interiors.

Condensation attacks the exterior paints from the inside where they lay against the walls and causes them to peel and eventually flake away. To check this condition Devoe & Raynolds is conducting research on paints that will resist the effects of moisture trapped within a structure, the speaker stated.

Mildew on painted house exterior walls appears to be growing more prevalent, the paint scientist explained. As little as ten years ago most paint experts thought of mildew as something occurring only in the damper coastal areas. But in recent years, researchists have found that houses in the interior of the country, previously considered dirty, were actually stained by mildew.

Many houses, the speaker declared, show bad mildew staining soon after repainting. It is known that certain viruses become non-resistant to antibiotics. Flies finally became resistant to DDT, he noted.

Once it was realized that many forms of mildew were growing resistant to chemicals previously used in paints to eliminate them, it became necessary Dr. Long explained, to find by research new chemicals which would effectively check mildew.

In its efforts to develop new paints with greater resistance to mildew, the paint industry is making progress, Dr. Long said. Devoe & Raynolds has devoted a substantial part of its research staff to this problem and will continue these efforts in the company's new half-million dollar research laboratory recently completed in Louisville, Ky.

Devoe scientists, Dr. Long reported, have worked out paint additives which are quite successful in protecting a new paint job against mildew.

Other recent improvements in paints which make the task of home maintenance easier, Dr. Long pointed out, are: new finishes, using an alkyd resin base, which are odorless, scrubbable and can be applied to bare plaster; one coat house paints which have the covering power formerly required by two coats.

New paint applying methods such as paint rollers are also a great help to the "do-it-yourself" home owner, he noted. Paint rollers can be used on the exteriors of houses and barns as well as on home interiors to do a fast, neat painting job without the need for professional skill, the speaker said.

Dr. Long's talk was part of his current tour of key cities to instruct Devoe dealers and their employees in ways to help consumers obtain better utilization of paints and hence greater economy in their paint expenditures.

"Week-End Decorator" Program takes top honors in ad competition. Eugene W. Fowler, right, advertising manager for Archer-Daniels-Midland Co., Minneapolis, receives congratulations of Howard G. Sawyer, vice-president, J.T. Chirug Co., Boston and chairman of the "Toppers" committee, for his winning entry in the NIAA "Topper Award" competition. ADM's award came in recognition of the firm's "Week-End Decorator" program designed to help paint manufacturers develop "do-it-yourself" market. Award was made at recent NIAA meeting, Montreal

•

Five Nopco Employees Honored For Quarter Century Service

Solid gold watches, presented by T. A. Printon, president and chairman of the board of Nopco Chemical Company, were awarded to Mrs. Helen W. Silver, executive secretary; George R. Zust, salesman; Bernard A. Dombrow, head of the plastics laboratory; Francis J. Licata, technical director of Metasap Division; and William Sramek, member of the maintenance staff, on the completion of their 25th year of service.

The occasion also marked the induction into the Nopco "Fifteen Year Club" of eighteen members. These members received an additional week vacation in addition to gold service emblems.

NY Club To Meet Sept. 15

The New York Paint and Varnish Production Club announces a change of date for its next regular meeting. The next meeting has been definitely set for Wednesday, September 15, 1954. This new date takes the place of the normally first Thursday meeting time.

The reason for the change is that a joint meeting is being held with the American Chemical Society. This promises to be an unusually attractive and informative affair, please keep the date open. Further details later.

F. E. Barmeier, Printing Ink Expert, Succumbs

Floyd E. Barmeier, until last year midwestern production manager of Sun Chemical Corporation, and a 40-year veteran of the printing ink industry, died recently at his home in Riverdale, Ill. He was 63 years old.

Thirty-five of Mr. Barmeier's long years in the printing ink field were spent with Sun Chemical Corporation units. He had been responsible for additions to Sun's Clearing, Ill., plant that made it the largest ink-producing plant in the United States.

After receiving his B.S. degree from Wisconsin in 1912, he spent two years with a firm of consulting chemists. Next Mr. Barmeier became a chemist for R. R. Donnelley & Sons, probably the first one in the printing business in the midwest.

A few years later, he joined American Printing Ink Company (now a division of Sun), and was in charge of control and formulating. He also did field service work for larger customers.

•

New Louisville Plant to be Opened by DuPont

A new open type construction plant with central controls will be installed in Louisville, to produce "Freon 22" refrigerant and a propellant gas for insecticide bombs, by E. I. DuPont de Nemours & Co., it was announced. Capacity on this product will be materially increased by the addition, states the company.

Dr. Milton Eisenhower, Pres. Penn State College, presents award to R. W. Ostermayer.

R. Ostermayer of PICCO Receives Penn State Distinguished Award

Robert W. Ostermayer, president of Pennsylvania Industrial Chemical Corporation, was one of the recipients of the Distinguished Alumnus Award of The Pennsylvania State University.

Each year the award is presented to five alumni 'whose personal life, professional achievements, and community service exemplify the objectives of The Pennsylvania State University."

Following graduation in 1917 from Penn State, Mr. Ostermayer was associated for five years with DuPont as a chemical engineer. In 1922 he joined Pennsylvania Industrial Chemical Corporation and two years later became president.

In making the award the university placed particular emphasis on his work creating scholarships for young people. His company established the Picco Scholarships for graduates of Clairton and Chester High Schools where its plants are located. The equivalent of ten $2,000 scholarships are made available to boys and girls in each of these schools every year. Mr. Ostermayer also established a memorial scholarship at Penn State in honor of his son, Laurence Justice Ostermayer, who died in World War II.

The university also recognized Mr. Ostermayer's interest in community and church affairs and industrial relations.

•

Godfrey L. Cabot, Inc. Opens Wollastonite Mill at Willsboro, N. Y.

Godfrey L. Cabot, Inc., Boston, Massachusetts, has announced the opening and operation of a new $1,790,000 mill at Willsboro, New York, production of 60,000 tons of Wollastonite, calcium metasilicate.

Wollastonite was first introduced to industry in commercial quantities by Cabot in 1952. Ground to varying degrees of fineness, it is being offered in a variety of grades for use by the paint, ceramics, plastics and welding rod coating industries. It is also being used in the manufacture of low-loss dielectrics and in other new applications constantly being developed by research and sales activities.

The new plant is modernly equipped for 100% mechanical handling and processing and can be easily expanded to meet increased production requirements. It is located on a level site bordering Lake Champlain, about two and one-half miles west of the town of Willsboro.

A. C. Horn Company, Div. of Sun Chemical Corp., recently held the fourth of a series of monthly seminars on paint technology. Listening to an illustrated talk on resins by R. L. Norum of Bakelite Company, are representatives from the firm's sales, production, research departments.

Standard styles include pails, drums, handi cans. Always glad to discuss special-purpose containers.

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On June 1, 1954, Archer-Daniels-Midland Co. acquired two additional resin plants, one in Newark, New Jersey, the other in Pensacola, Florida. Already the nation's leading supplier of drying oils and paint vehicles, ADM has now added a complete line of synthetic and natural resins. Of special importance is the addition of specialized synthetic resins for the manufacturers of architectural and industrial finishes.

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Paint manufacturers have long recognized the economies offered by tank car, tank truck, carload and truck load purchases. Savings in quantity and freight differentials are *more than a penny a pound* in tank cars compared with LCL shipments. Now with the addition of 150 resins to ADM's line of linseed, soybean and marine oils, specialty products, and fatty acids, "large economy size" shipments are more feasible than ever before. Can you think of any easier way to save than to bulk your shipments with ADM?

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ro its line!

2 ADM gives you fast service from strategically located plants

facilities recently added to ADM's nation-
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Tel: Wilbank 3426

Archer-Daniels-Midland co.

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F. L. Wurzburg

W. E. LeClair

Interchemical Corp. Establishes Product Application Engr. Dept.

A Product Application Engineering Department has been established by Interchemical Corporation, to be headed by F. L. Wurzburg, Jr., assisted by Willis E. LeClair. They will be under the supervision of Norman S. Cassel, vice-president for research and development.

The new department, according to an announcement, will deal with problems posed by the inter-relationship of chemistry and mechanics in the application of the company's chemical coatings such as printing inks, industrial finishes, textile colors and others. It will provide the central research laboratories and divisional development laboratories with information and assistance in projects where problems of mechanical application or control are involved; assist the operating divisions in the sales of their products; inform research units of new developments, and working with outside sources to develop instruments or equipment needed for most advantageous use of the company's chemical coatings. Mr. Wurzburg has been with the company since 1933, and is widely known in the graphic arts industries. Mr. LeClair joined the company in 1935 and has been in an engineering capacity with research and development in the application of chemical coatings.

•

Dow Boosts Capacity of Bisphenol, Basic Chemical for Epoxy Resins

Completion of new facilities at Midland for production of Bisphenol A, doubling capacity for this product, was recently announced by The Dow Chemical Company.

Most of the expanded production will go into the fast-moving epoxy resins which have been skyrocketing since World War II. Bisphenol A is a basic building block in their manufacture. These resins are playing an important part in broadening the uses of protective coatings in many industrial fields. Other expanding uses are for potting and embedding of electrical parts in plastics) in the electronics field, for numerous industrial adhesive applications, for drum and can linings and as plastic pipe for the chemical and petroleum industries.

Dow started production of Bisphenol A in 1935 and continues its role as a major supplier. The product became of commercial importance after 1938 when its early use was principally in the production of modified phenolic resins for furniture finishes and printing inks.

•

Vulcan Steel Container Co. Expands Operation

Construction of a large addition to its present building to increase its operation by 30 per cent has been announced for Vulcan Steel Container Co. of Birmingham, Alabama, by president Gordon D. Zuck.

Mr. Zuck says: "The fine response of Southern pail and drum users to the availability of our modern plant in the heart of the South demands larger production and storage facilities. Such expansion is necessary in order to provide the prompt, efficient service we intend always to afford our customers. In less than two years of operation, Vulcan Steel Container Co. has proven its ability to serve Southern industry efficiently and economically—and our confidence and faith in the rising economy of the South is demonstrated by this expansion program."

Vulcan Steel Container Co. is the only plant in the South devoted exclusively to the production of steel pails. The company manufactures a full line of sizes and styles from 1 to 8 gallon, open head and drum type, hi-bake lined and lithographed.

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AZO ZZZ-22

A high oil absorption Zinc Oxide having large Acicular Particles which gives heavy body

medium

AZO ZZZ-11

A medium oil absorption Acicular Zinc Oxide imparting exceptional weathering qualities to exterior paints

AZO acicular lead-free zinc oxide is a superior pigment available in a wide range of oil absorptions

AZO ZZZ-33

A definitely Acicular type with a lower oil absorption, but chemically identical with AZO ZZZ-11 and AZO ZZZ-22

low

The extra durability, the finer weathering qualities that Acicular Zinc Oxide gives to paint can be obtained with AZO Acicular Zinc Oxides available in a wide range of oil absorptions to meet your requirements

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AMERICAN WHEELABRATOR

DRUM CLEANING UNIT

Airless Abrasive Type

Airless abrasive blasting machine for reconditioning cleaning of 30 and 55 gallon steel drums before painting and coating operations is also capable of cleaning the exterior surfaces of closed-end drums and both the exterior and interior surfaces of open-end drums, to-gether with the lids.

The machine is equipped with hydraulically-rotated table with a partition that divides the machine into compartments or work stations. Each work station consists of two power driven spinner shafts that rotate one drum in the blast zone. Each station also has a fixture for holding the lids in the blast. This arrangement permits one station to be loaded and unloaded while the other is in the blast zone, so continuous operation can be maintained.

Cleaning is done by abrasive hurled centrifugally by a rotating bladed wheel mounted in the rear wall of the cabinet, and the spinner shafts are pivoted to enable the position of the drum with respect to the blast to be adjusted, so that either open or closed drums can be hit at the proper angle by the abrasive.

Features include push button starting and stopping controls, no compressed air is required, and loading and unloading is made easier. American Wheelabrator & Equipment Corp., Mishawaka, Ind.

FISHER

COLORIMETER

Eliminates Color Drifts

Davis-Bruning colorimeter reduces what the eye sees to a simple numerical formula that offers the manufacturers of opaque colored products a permanent "color memory" for matching, mixing, shading, and specifying colors. Because it is a reproducible standard from operator to operator, from year to year, it eliminates the expensive problem of production lots ruined by color "drift." The manufacturer claims that there is no long series of computations to find the dominant wavelength, brightness and purity of color, such as is necessary if a sample is analyzed on a reflectance spectrophotometer. The operator sees the colors blend as he would in mixing pigments. In fact, it is said that he can produce many visually identical matches which a spectrophotometer would reject as spectrally different. With little experience, an operator can obtain color matches on the new colorimeter to within 0.5 NBS color unit. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

COMBINATION COLORIMETER

Wide Application

Called the "Spectronic 20", this combination colorimeter and spectrophotometer produces high wavelength accuracy and spectral purity through use of diffraction grating, according to the company.

It is designed for speedy, simple operation by production-line inspectors and laboratory technicians who need use only two control knobs in making colorimetric analyses.

The company also claims that this instrument offers flexibility and a high degree of accuracy to research and quality control people concerned with the more complex analyses of spectrophotometry. Bausch & Lomb, 635 St. Paul St., Rochester, N. Y.

BAUSCH & LOMB

STABILIZER

Sodium-Free

Cascoloid ST-40, a sodium-free caseinate, has a solids content ranging from 50 to 53 percent. This stabilizer may be used with butadiene-styrene, acrylic resins and polyvinyl acetate emulsions. Important properties claimed by the manufacturer include good freeze thaw stability and its sodium-free qualities remove the possibility of efflorescence. The Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y

NEW MATERIALS — EQUIPMENT

ETHYL BENZENE
Varied Uses

Ethyl benzene is said to be a good solvent for vinyl-type polymerizations because it is an active "chain transfer" agent and promotes the formation of low molecular-weight resins. The property is desirable for the production of special use resins such as adhesives, coatings, etc. The medium evaporation rate and good solvent power of ethyl benzene make its use of particular value with coating resins, where it may serve as a vehicle for the resin after polymerization. Carbide and Carbon Chemicals Co., 30 E. 42nd St., New York 17, N. Y.

MEASURING UNIT
Gives Level of Liquid

Instrument measures the level of liquids in a closed tank, either under pressure or vacuum. Known as a "differential converter", this unit converts differential pressure into proportionate air pressure which in turn is transmitted to indicators, recorders and controlling equipment.

The instrument utilizes a pneumatic balance weigh-beam system and is small and lightweight (28 pounds net). Range of the instrument is readily adjustable in field application from 0-14 to 0-200 inches of water. The level reading over the entire range of measurement is continuous. Available with both steel and stainless steel bodies, the unit can withstand temperatures up to 350°F. and is rated for pressures of 750 or 1500 psi. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.

ELLIS

BRUSH TOP CANS
Save Application Time

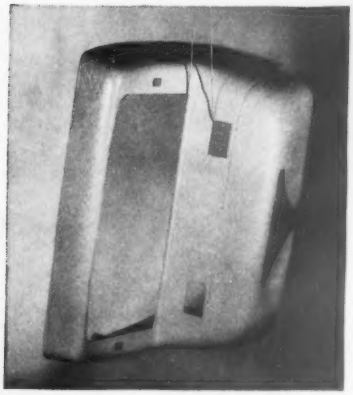
Line of brush top cans which is said to save application time, prevent waste of liquids, increase efficiency of maintenance and service and service men. These cans are designed for use with touch-up enamel, layout blue, sealing dope, cements and similar liquids. They contain either a ring handle or detachable wood handle, both of which permit easy carrying or storing of cans in tool kits. Lugs soldered on opposite sides of the screw cap facilitates opening with greasy hands. George D. Ellis & Sons, Inc., 4040 N. American St., Philadelphia 40, Pa.

FORK TRUCK
For Rough-Surface Work

4000-pound fork truck is designed for outside or rough-surface work. Features a travel speed of 14 miles per hr., according to the manufacturer. Recommended for yard handling jobs requiring movement of materials over large areas. Utilizes low-pressure hydraulic system and motor-driven gear pump supplies under pressure to either lifting or titling cylinders, with speed controlled by acceleration of the engines; excess is by-passed to the reservoir. Baker-Raulang Co., Baker Industrial Truck Div., 1230 W. 80th St., Cleveland 2, Ohio.

A MARKET FOR SPEED

Lift trucks and other mechanical handling equipment, finished in safety-code yellow and black, benefit from lacquer's fast-drying, fast-taping qualities. Manufacturers and users alike find Hercules' new data on taping times interesting, useful, money-saving.



MULTICOLOR LACQUER NOT STATIC

New in the field of multicolor and textured lacquers is their adaptation to electrostatic spray machines, developed jointly with Ransburg. Are you up-to-date on this new area for the sale of money-making finishes?

FINGER-TIP BEAUTY

Subject of a paper given before Chemical Specialties Manufacturers' Association in May, new ethyl cellulose hair lacquers are easy to apply, easy to wash out, flexible, non-flaking.

For further technical or marketing information on these or any other developments in lacquer-type coatings made from nitrocellulose, ethyl cellulose, cellulose acetate, or Parlon® (chlorinated rubber), write to:

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
926 Market St., Wilmington, Del.

CL54-4

DOW

YEARS OF TESTING PROVE DOW LATEXES MAKE OUTSTANDING EXTERIOR PAINTS

Dow's latex research can help you develop latex masonry and stucco paints

Exterior paint formulations based on Dow Latexes have stood the tests of time—in field and laboratory. They've endured three to five years of rough weathering with good film integrity. Exterior paints made with a Dow Latex dry to a tough, impermeable film, have unusual durability. They're particularly easy to apply, dry quickly and can be recoated in a minimum of time.

Realizing that synthetic material is one of the keys to a bright future for the paint industry, Dow began a research and development program on latexes long ago and has done over five years of exterior formulation research on Dow Latex 512-K alone! As a result, Dow offers you a wealth of information for developing exterior paints made with Dow Latex. Your nearest Dow sales office will tell you how Dow research laboratories are made available to your personnel.

If you are looking forward to modernizing your paint line with exterior paints made with Dow Latex, now's the time to contact Dow. Dow also makes available a bulletin "Dow Latex 512-K for Exterior Masonry Paints". Write to Plastics Sales, Department PL 488F. THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on DOW PLASTICS DOW

NEW MATERIALS — EQUIPMENT

AZELAIC ACID

For Resin Synthesis

Azelaic acid, designated Emerox 1110, is available in commercial quantities from the new ozone-oxidation process. In this process, oleic acid is oxidized at the ethylenic linkage to form an ozonide. This in turn is decomposed to yield two aliphatic acids, azelaic (dibasic) and pelargonic (monobasic).

According to the manufacturer, the unique characteristics of azelaic acid, coupled with increased availability broadens the scope of interest in this dibasic acid as a new raw material for plasticizers, resins, polyamides, polyesters, alkyd resins, and synthetic lubricants. For samples and literature write to Emery Industries, Inc., Dept. 5. Carew Tower, Cincinnati 2, Ohio,

PAINT THICKENER

Water-Soluble

Soluble polysaccharide gum (Burtonite #7) is said to have properties for use as a protective colloid, thickener and film forming agent. This material is soluble in cold and hot water; insoluble in organic solvents, oils, and unless treated with an acidic salt, water containing 0.25% or more of borax. Solutions of this material is best prepared with the aid of rapid agitation, such as a high speed propeller type mixer. According to a technical report furnished by the manufacturer, this material has characteristic thixotropic properties of most natural and synthetic gums. Solution viscosity increases rapidly with concentration and decreases with rate of shear. The manufacturer also claims that dilute acids, alkalies and electrolytes cause relatively little change in viscosity. One important use of this material is a thickener in polyvinyl acetate emulsion paints. The Burtonite Co., Nutley 10, N. J.

Elusive!

GREASED PIGS and GOOD PAINTS

WHEN good economical paints are a problem, Neville's versatile resins may be the answer. A good example is Neville LX-685, a light colored, low-cost oxidizing petroleum resin. It can be cold cut or cooked and yields dry films with good reagent resistance and minimum after-yellowing. One call will bring a sample.

You can go "whole hog" on these formulas:

COLD CUT

Gallons	Pounds	
17.3	143	Neville LX-685, 70% Solution
20	162	Bodied Linseed Oil (Z-5 visc.)
18.6	119	Mineral Spirits
	1.33	6% Cobalt Naphthenate
56	425.33	

Method of Preparation: Blend together with good agitation.

COOK

Gallons	Pounds	
	100	Neville LX-685,135
10	78	China Wood Oil
15.	116	Alkali Refined Linseed Oil
40	255	Mineral Spirits
	1.6	6% Cobalt Naphthenate
	2.4	24% Lead Naphthenate
	0.4	6% Manganese Naphthenate
74	553.4	

Method of Preparation: Body combined oils at 585°F., check with LX-685, 135 Resin, reduce, and add driers.

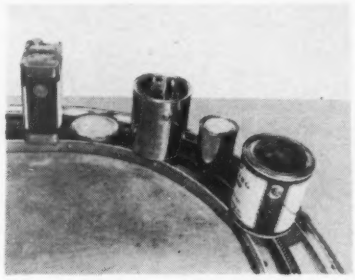
While pigs are out of our line, we might say that you aren't buying "a pig in a poke" when you buy

Neville Resins

NEVILLE CHEMICAL CO.
PITTSBURGH 25, PA.

Plants at Neville Island, Pa. and Anaheim, Cal.

P56



M-H STANDARD

CAN CONVEYOR

Handles All Sizes

Monoflo conveyor is designed for conveying cans and similar items with rimmed bottoms through any desired path at speeds ranging from 0 to 12 ft/min. According to the manufacturer, its main features are economy, trouble free operation, silence, compact design, ease of installation and prompt delivery. Cans can be loaded or unloaded from the conveyor at any point. They are supported throughout the travel on a metal track and are propelled by the flexible rotating cable. Applications include conveying through inspection, ovens, coolers, washers and other processes requiring slow movement. Available in any fixed or variable speed from 0 to 12 ft. per minute and to suit any voltage requirement. M-H Standard Co., 515 Communinraw Ave., Jersey City 4, N. J.

ANTI-SAGGING AGENT

Does Not Affect Gloss, Color

Raybo 94 combines low cost and freedom from affecting gloss and color to produce an effective additive to stop sagging, retard settling, and improve dispersion. Samples and complete literature are available from the Raybo Chemical Co., Huntington, W. Va.

Now in Preparation

THE 1954 REVIEW OF THE PAINT INDUSTRY

The Industry's Annual One-Volume Digest
of the TECHNICAL AND BUSINESS PROGRESS

A long felt need for a permanent and authoritative record of the historical developments in the paint and varnish industry—products, techniques, formulae, patents, etc.—has now been met. It is now being filled by the "Review of the Paint Industry"!

FIRST EDITION ACCLAIMED BY ALL

The 1953 Edition of the "Review of the Paint Industry" initiated this service by the Powell Publications. It was acclaimed by production men, technical men, manufacturers and publication authorities as a monumental work of historical fact and data of inestimable reference value.

AUTHORITY FOR VITAL DATA

Now the 1954 Edition is in preparation and it will report the industry's development in the meticulous tradition set by the first edition . . . . . covering • Raw Material Developments • Production Techniques • Test Methods • Government Specifications • Patent References • Technical Books • Business Trends.

PRODUCTION MEN, CHEMISTS AND TECHNICAL DIRECTORS —

Watch for further announcements on the publication of this "vital tool" for your daily use. To keep up to date on the latest in the coating industry and on the trends ahead, this book is a "must". Everything that has happened in the paint and varnish industry for the entire year will be available at your fingertips.

MANUFACTURERS OF MATERIAL AND EQUIPMENT FOR THIS INDUSTRY —

When the men who select, who specify and who influence the purchase of raw materials and equipment in this industry reach for this book. . .365 days a year. . .for reference in their work. . .be sure you are represented with your story. Send for brochure giving complete rates and data for your advertising message.

POWELL MAGAZINES, INC.
855 AVENUE OF THE AMERICAS, NEW YORK 1, N.Y., Tel: BRYANT 9-0497

NEW MATERIALS — EQUIPMENT

TEST PANEL SERVICE

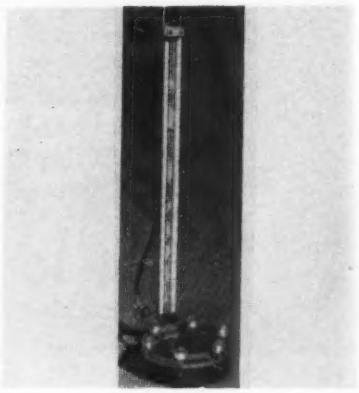
Low Cost

The Makit Co. offers a service to recondition old and used test panels for paint manufacturers. The customer merely accumulates his used test panels and ships them in an old five gallon kit. Upon receipt, this firms reconditions the panels and they are shipped back to the customer in the same five gallon kit. Each panel is given a light protective coating of oil which can be removed with a little petroleum solvent. Any size flat steel panel up to 6×12 inches and 24 gauge will be reconditioned. It is said that these reconditioned panels require no sanding or conditioning by the operator, thus saving considerable time and effort. For complete details on this service, contact The Makit Co., Station B, Box 146, Toledo, Ohio.

PORTABLE VENTILATOR

Varied Uses

Two-way ventilating system, used as a blower or as an exhauster, is said to have these applications: removing toxic fumes, removing smoke, dust removal in such operations as pigment and dry chemical handling, removing fumes from paint spraying, etc. May be used with or without collapsible air duct. With duct, this unit is used for ventilating confined areas which cannot be reached satisfactorily by conventional types of stationary equipment. For further details write to Mine Safety Appliance Co., 201 North Braddock Ave., Pittsburgh, Pa. and request Bulletin Number 1503-1.



KUSHNER

STRESS MEASURING UNIT

For Paint and Lacquer Films

The "Stresometer" is an instrument for measuring stresses in chemically deposited metals, electroplated metals and paint, lacquer and plastic films. These stresses, caused by the shrinkage or expansion of the deposited layers, are of great practical and theoretical importance in connection with the structure of the deposits. According to the manufacturer, this instrument can measure stresses ranging from 100,000 lbs. per sq. inch in tension (contractile) to 50,000 lbs. per sq. inch compression (expansive).

In working with paint, lacquer or plastic films, the film may be sprayed, brushed, dipped or rolled on the disc and the stress, which is a measure of the shrinkage or expansion of the film formed, can be read from the scale when the film is dry. In fact, it is possible to follow the "curing" of such organic films very readily, by means of the readings of the instrument. Two models are available: a plastic type for electroplated chemically deposited metals; the other is of metal and is used for testing paint, lacquer and plastic films. Joseph B. Kushner Electroplating School, 115 Broad St., Stroudsburg 1, Pa.

ONLY

1¢ PER GALLON OF PAINT

That's all it costs to remove the odor from your paint with MASKIT #2

Give your paint that extra sales appeal that makes it so much more acceptable to painters and home owners alike. Remove the odor effectively and economically with MASKIT #2!

In addition to masking the paint odor in the can, this amazing new product also masks the odor while the paint is being applied as well as during—and after—the drying period. AND—you get all this for a cost of *less than 1¢ per gallon of paint!*

MASKIT #2 also helps to reduce the irritation to eyes, nose and throat caused by the volatile components of some paints. It will not affect drying time or color durability.

WRITE TODAY FOR A TRIAL QUANTITY. MASKIT #2 also odor-masks lacquer thinners, varnishes and other similar products.

AROMATIC PRODUCTS, Incorporated

15 East 30th Street, New York 16

CHICAGO • DALLAS • MEMPHIS • PITTSBURGH • LOS ANGELES • BOSTON

MEET THE FAMILY...

The Crown "F" Style Family, That is!

There's a Crown "F" Style . . . in any size . . . to meet your most exacting can requirements. Quarter Pints, Half Pints, Pints, Quarts, Half Gallons, Gallons. Light in weight! Easy to handle! Perfect protection for your product! And there's more "sell" in Crown's superior lithography!

Most Important: Recent plant improvements enable us to fill your "F" Style orders not next month – or next week – BUT NOW! Think it over. Aren't there a number of reasons why Crown should be one of your "F" Style suppliers? Call or write your nearby Crown sales office for complete details. Ask for Free Catalog.

One of America's Largest Can Manufacturers

CROWN CAN
DIVISION
CROWN CORK & SEAL COMPANY, INC.

PHILADELPHIA • CHICAGO • ORLANDO • NEW YORK • BALTIMORE • BOSTON • ST. LOUIS

NEW MATERIALS — EQUIPMENT

ALICYCLIC RESIN

Improves Alkali Resistance

Resin MS2, an aclicyclic resin, which when added to urea-alkyd baking enamels is said to improve resistance to alkali, soaps, and detergents. Other claims are: increases gloss, hardness, and alkali resistance, and improves adhesion in lacquers; and may be used as a vehicle for luminous paints, where its neutrality and resistance to color change and water make it effective.

According to the producer, test have shown that this particular resin does not yellow in enamel when baked at 300 deg. F. for 30 min., and does not contribute to after-yellowing in weathering or darkness.

Technical data and samples are available upon request from Baird Chemical Corp., 254 W. 31 St., New York 1, N. Y.

ENERGY GENERATOR

Ultrasonic Type

400 watt ultrasonic energy generator and a variety of transducers for production line or laboratory degreasing, emulsifying, dispersing, depolymerizing, etc., are available.

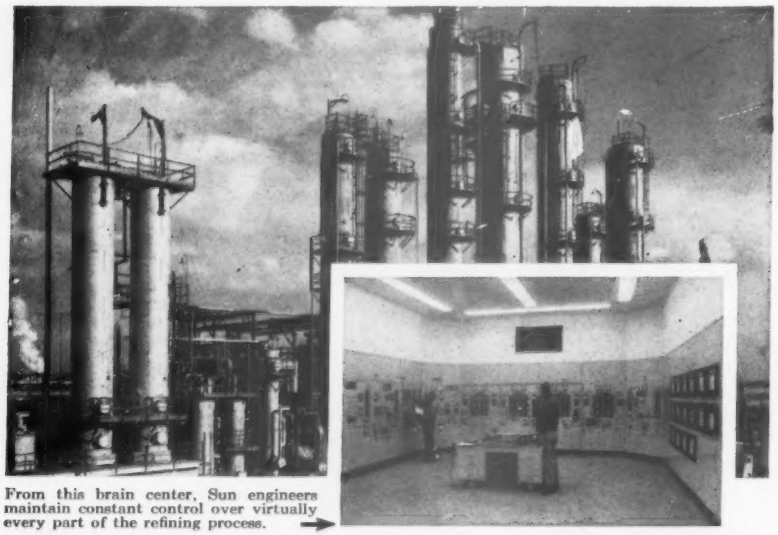
Known as Rich-Roth "400", this generator is said to be continuously tunable of the frequency range from 10 to 1200 Kc./sec.

For complete information on this ultrasonic energy generator, write to Rich-Roth Laboratories, 1240 Main St., Hartford, Conn.

MILDEW PREVENTIVE

Completely Insoluble

Mildew and rot preventive called "Roboid" is said to be effective in impregnating fibres of raw textiles, rope, and the like, thereby keeping moisture from damaging vital cores. The supplier of this material claims that "Roboid" is completely insoluble and its effect permanent. Samples are available from Charles J. Dilke & Co., 383 Brannan St., San Francisco 7, Calif.



From this brain center, Sun engineers maintain constant control over virtually every part of the refining process.

SUN OIL'S NEW PLANT NOW OFFERS
TOLUENE AND XYLENES
OF CONSTANT UNIFORMITY

Used as solvents in enamels, varnishes and industrial finishes, these new, constantly uniform Sun aromatics help you hold your finished products to close specifications—even over long-run production.

Toluene and xylenes are among the important petrochemicals now being made as primary products—not by-products—at the new Sun Oil Co. plant in Marcus Hook, Pa. This is the largest plant on the East Coast extracting these aromatics from petroleum. Precision instrumentation, combined with the most modern available facilities, provides constant control of every step in the refining process to maintain new high standards of uniformity.

For complete information on these new paint and varnish solvents, write Dept. PV-8

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY
SUNOCO®

PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL

Refiners of famous High-Test Blue Sunoco Gasoline

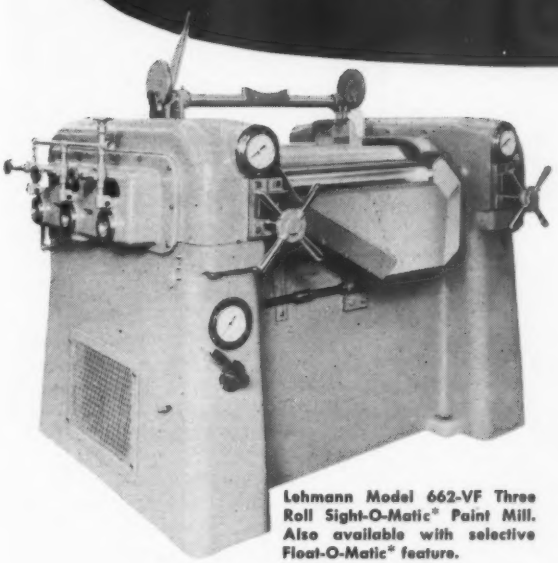
LAMSON

FORK LIFT TRUCK

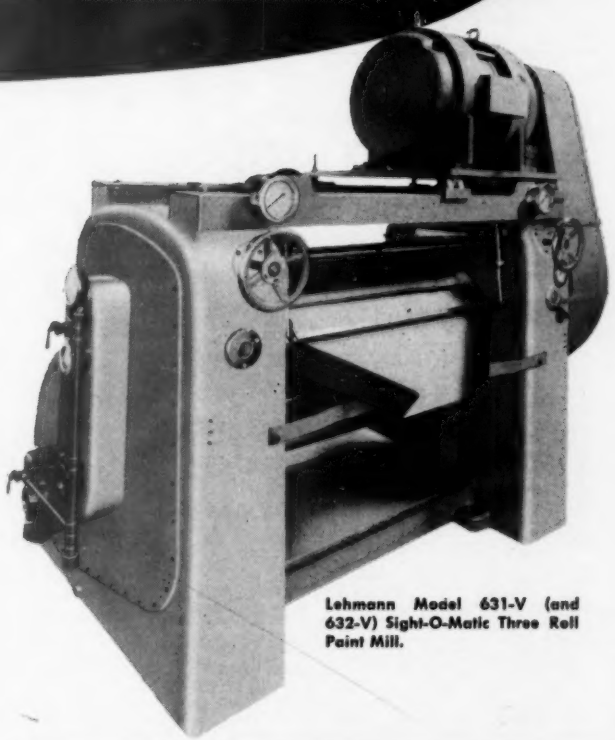
Capacity of 3,000 Lbs.

"M-324" fork lift truck has a capacity of 3,000 pounds at 24 inch load center. A feature of this unit is the "Mobil-Matic Drive"—a heavy-duty, oil immersed, multiple disc clutch, a constant mesh transmission and a fluid coupling. According to the manufacturer, this drive unit transmits power smoothly from the engine to the drive wheels with maximum efficiency and minimum wear on the engine, clutch, and other components of the unit. It is also equipped with the "Hydra-Lizer" which consists of equalizers mounted on each rear wheel and connected hydraulically which is said to cross compensate the truck when the front or rear wheels pass over bumps or depressions. Lamson Mobilift Corp., 1604 S. W. 10th Ave., Portland 1, Oregon.

IF YOU NEED BETTER DISPERSION — take it up with LEHMANN



Lehmann Model 662-VF Three Roll Sight-O-Matic* Paint Mill. Also available with selective Float-O-Matic* feature.



Lehmann Model 631-V (and 632-V) Sight-O-Matic Three Roll Paint Mill.

Problems concerning dispersion in paint formulae are daily tasks for Lehmann. We are fully equipped and staffed to carry out research under practical operating conditions. By sending us samples for test, you can avoid the cost and delay of private research.

And we welcome these assignments because they help us to keep Lehmann paint mill design abreast of the needs of technological development in paint formulation. So send us your samples, state your problem, and we will undertake to find the answer for you—all without obligation. Be sure—use Lehmann test facilities.

Do any of your mills need factory reconditioning? Lehmann has cut mill out-of-service time by at least one-half by the recent addition of many modern machine tools and new techniques. Phone or write for details.

Send for descriptive bulletins of any or all machines shown here.

*Reg. U. S. Pat. Off.

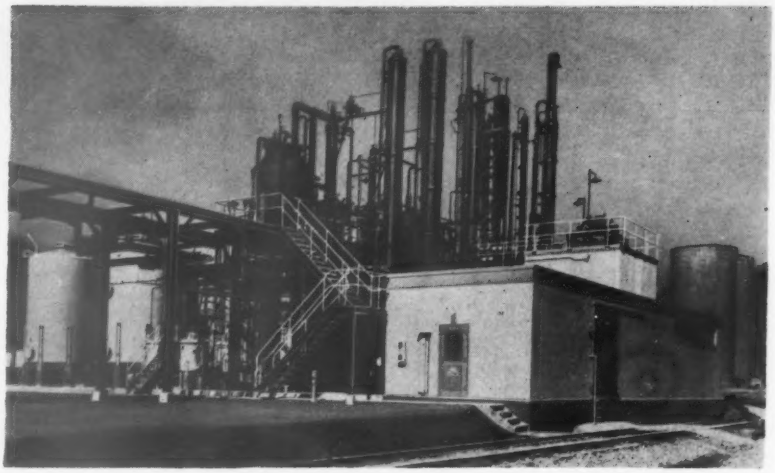
LEHMANN

J. M. LEHMANN COMPANY, Inc.

MAIN OFFICE AND FACTORY: 558 NEW YORK AVE., LYNDHURST, N. J.

UCC Boosts Acrylic Esters Production at Institute, W. Va.

This new unit (photo right) for the commercial production of high purity grades of ethyl and methyl acrylates has recently been completed at the Institute, West Virginia plant of Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corporation. Production facilities of the new unit represents a substantial expansion of Carbide's previous capacity for the manufacture of these important polymer and copolymer intermediates. This unit can also be used for production of other esters of acrylic acid.



UCC unit for the commercial production of ethyl and methyl acrylates.

Increased production of these acrylic products will afford a continuous large volume supply for manufacturers of polymers and copolymers useful in many fields such as emulsion paints, etc.

•

Hercules Powder Doubling Production of "Abitol"

The production of hydroabietyl alcohol paints and varnishes, as well as other applications, will be doubled in the third quarter of this year, according to an announcement by Dr. Wyly M. Billing, general manager of Hercules Powder Company's Synthetics Department.

The expansion in production facilities is being carried out at Hercules' synthetic resins facilities at Burlington, N. J., the only plant in the world manufacturing technical hydroabietyl alcohol, "Abitol."

"There has been an increasing demand for the use of 'Abitol' in numerous industries, but particularly in the paint and varnish field," Dr. Billing said.

One application for which the demand for "Abitol" has been particularly outstanding is the ever increasingly popular odorless alkyd paints and enamels, he pointed out.

Last year, the use of "Abitol" in alkyd resins for flat wall paints increased 44 per cent over 1952 and 1954 sales to date indicate an additional marked increase of the use of "Abitol" in this field, Dr. Billing said.

The expansion project, in addition to new equipment, entails process refinement and improvement, all adjusted to the 100 per cent boost in output.

The Burlington, N. J. plant, which makes other Hercules synthetic resins, also is the site of a $4,000,000 plant now under construction for the production of dimethyl terephathalate (DMT), basic raw material for polyester fiber.

ST. JOE
Unit-Loads
FOR TRUCK & CARLOAD SHIPMENTS OF
ZINC OXIDE

NOW AVAILABLE AT NO ADDITIONAL COST

THE ST. JOSEPH LEAD COMPANY after several years of experimenting, has developed for its zinc oxide customers a loading method known to the trade as "unit load." This new method has been worked out successfully for both truck and carload shipments with a number of zinc oxide users who have adopted it as a standard practice for their shipments. This service is provided at no additional cost to the customer, and has resulted in a saving of up to 50% of the unloading cost of bag by bag handling. Each unit-load is compressed to about 75% of its original volume, which results in increased storage capacity. Improved material handling, and greater cleanliness are other advantages gained by this method.

YOUR 6-PAGE ILLUSTRATED FOLDER, CONTAINING DETAILED OPERATING DATA ON THE ST. JOE UNIT-LOAD METHOD IS YOURS FOR THE ASKING.

ST. JOSEPH LEAD COMPANY
250 Park Avenue, New York 17
Plant & Laboratory:
Monaca (Josephtown) Pennsylvania

ORONITE

NAPHTHENATE

DRIERS

are guaranteed to be free of modifying agents which could react with vehicles, pigments or other paint additives to **cause—**

discoloration
"sleepy" drying
loss of drying power

Produced by the first manufacturer of metal naphthenates in the U. S. A. and the only producer with its own supply of naphthenic acids in its own backyard.

Exclusive Distributor
515 Madison Avenue, New York 22, N. Y

NAFTONE INC.

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Heyden Holds Annual Sales Conference in New York

Heyden Chemical Corporation's Annual Sales Conference was held from June 16 to June 18 at the company's New York office, 342 Madison Avenue.

Seated (left to right) are F. A. Degener, Chemical Sales Manager; Dr. Herman Sokol, Vice President-Research; Arthur Broadman, Vice President-Engineering and Purchasing; John P. Remensnyder, Chairman of the Board; Simon Askin, President, K. M. Irey, Assistant Vice President-Production; Dr. F. T. Peters, Manager Market Development; C. J. Meisinger, General Traffic Manager.

Attendants at the recent Heyden Chemical Co. Sales Conference, New York City.

Standing (left to right) are S. Neader, Sales Representative-Chicago; E. Vogel, Sales Representative-Chicago; R. Kulow, Sales Representative-New York; J. T. Kratina, Sales Representative-New York; Harold Von Oehsen, Branch Sales Manager-New York; G. Lee, Vice President, McArther Chemicals, Ltd.; E. Barkley, Technical Sales Representative; T. Risch, Branch Sales Manager-Cincinnati; I. Loxley, Branch Sales Manager-Providence; A. G. Stern, Branch Sales Manager-San Francisco; W. Spreen, Mid-Western District Manager; R. Aude, Plant Manager-Fords, N. J.; Dr. T. R. Aalto, Manager Technical Sales; R. Knowles, Sales Representative-Detroit; J. Claypoole, Branch Sales Manager-Philadelphia; W. Kraft, Group Leader-Applications Group; J. Hutchins, Technical Sales Representitive; Ely Balgley, Supervisor, New Product Development; W. Deakyne, Sales Representative, Philadelphia; J. Doroskin, Branch Sales Manager-Chicago.

•

Hilton-Davis Appoints Robins Co. Sales Representatives in St. Louis

G. S. Robins & Company, chemical suppliers, has been appointed sales representatives to the protective coatings industry in the Greater St. Louis market area.

The Robins organization, headed by H. L. Dahm, is an established St. Louis distributor of chemicals. It will represent Hilton-Davis in the sale of flushed and dry color pigments to paint, varnish and lacquer manufacturers. Marvin Schneller of Robins will call on the trade in the market area bounded by Cedar Rapids, Iowa; Decatur and Cairo, Ill.; and Jefferson City, Mo.

judge for yourself these properties of

WITCO DRIERS

accurate metal content
low viscosity
solution stability
excellent compatibility
light color

Then call your nearest Witco office and order those meeting your requirements . . .

WITCO NAPHTHENATE DRYERS

6% Cobalt, 6% Iron, 16 and 24% Lead, 6% Manganese, 4 and 5% Calcium, and 8% Zinc . . . high-quality traditional driers.

Witco's complete line of driers includes: Octoic Acid Driers, Witall® (Tall Oil Driers), and Witco Odorless Driers.

Write for technical literature and samples.

Manufactured in Witco-owned and operated plants at Chicago, and Los Angeles.

WITCO CHEMICAL COMPANY

260 Madison Avenue, New York 16, N. Y.

Los Angeles • Boston • Chicago • Houston
Cleveland • San Francisco • Akron • Atlanta
London and Manchester, England

BENTONE* GELLING AGENTS IN MODERN PAINT FORMULATIONS

...one of a series of condensations from laboratory reports detailing uses of BENTONES 18-C and 34

NEW DUTCH BOY BENTONE 18-C BOOSTS APPARENT VISCOSITIES OF VINYL FINISHES

HOW *DUTCH BOY BENTONE* 34 IMPROVES CLEAR FINISHES

DUTCH BOY BENTONE 34 decreases sagging and running in clear finishes. When properly dispersed, it does not appreciably reduce gloss or clarity. By preventing hard settling and maintaining thorough, even dispersion of flatting agents, it promotes good uniformity.

Rubber-Base Paints Proved More Durable with *BENTONE* 34

In a recent 8-month test, severe alligatoring and checking developed in a styrene-butadiene paint ...but not in the same paint with 6 lbs./100 of *BENTONE* 34 added. Besides improving film durability in this and chlorinated rubber paints, *BENTONE* 34 aids brushing, controls penetration, reduces sag.

GIVES BODY TO TRAFFIC PAINTS WITHOUT INCREASING SET TIME

Bodying traffic and zone marking paints with *BENTONE* 34 does not retard solvent release. Paints set within minutes. With glass bead reflector types, hard packing is eliminated without impairing adhesion.

Want to know More About Dutch Boy BENTONES?

You can easily get details on the new *DUTCH BOY BENTONE* 18-C. Just write for our brochure. Ask for the 84-page *BENTONE* 34 handbook, too, if you haven't a copy. It gives theory, use and formulations.

Vinyl finish formulators are welcoming *BENTONE* 18-C... the recently developed *DUTCH BOY* gelling agent for high polarity organic systems.

They find *BENTONE* 18-C ideal for overcoming low viscosity resulting when large proportions of ketone thinners are used to dissolve vinyl resins. By bodying the paints to higher apparent viscosities, *BENTONE* 18-C greatly improves working properties, and reduces hard pigment settling and sag.

In a typical gray vinyl topcoat recommended for use over a vinyl primer in a marine or metal protective application, *BENTONE* 18-C does even more. It prevents "floating" due to separation of lampblack and titanium dioxide and gives greater color uniformity. Its expanded gel lattice structure also contributes valuable film reinforcement properties.

Dutch Boy* CHEMICALS

*"*Dutch Boy*" and "*Bentone*" are registered trademarks of National Lead Company.

NATIONAL LEAD COMPANY
111 Broadway, New York 6, N. Y.
In Canada: CANADIAN TITANIUM PIGMENTS LIMITED
630 Dorchester Street, West • Montreal

Oil Chemists Announces Short Course at Lehigh, Aug. 16-20

Program for the short course sponsored by the American Oil Chemists' Society to be held at Lehigh University, Bethlehem, Pa., August 16-20 is as follows:

August 16

"Technological Trends," by Waldo C. Ault, Eastern Regional Research Laboratory, Philadelphia; "Economic Trends," by Albert A. Kreig, Swift & Co., Chicago; "Vegetable Oils," by Donald H. Wheeler, General Mills, Inc., Minneapolis, Minn.; "Animal Fats," by Clark Rose, Darling & Co., Chicago; and "Marine Oils," by John Hetchler, Archer-Daniels-Midland Co., Minneapolis, Minn.

August 17

"Tall Oil," by Richard Herringer, of Arizona Chemical Company, in Linden, N. J.; "Handling Fats and Fatty Acids," by Leonard L. Sutker, Wilson & Co., Philadelphia; "Composition of Materials and Analytical Methods," by Roy W. Riemenschneider, Eastern Regional Research Laboratory; "Autoxidation," by Walter O. Lundberg, Hormel Institute, Austin, Minn.; and "Polymerization, Copolymerization, and Isomerization," by John C. Cowan, Northern Regional Research Laboratory, Peoria, Ill.

August 18

"Drying and Semi-Drying Oils," by Walter A. Gloger, National Lead Company, Philadelphia; "Utilization of Inedible Animal Fats," by Dale V. Stingley, Armour & Co., Chicago; "Animal Feeds," by Henry R. Kraybill, American Meat Institute, Chicago; "Hydrolysis Methods," by Edward A. Lawrence, Colgate-Palmolive Company, Jersey City, N. J.; and "Separation," by Victor J. Muckerheide, Emery Industries, Inc., Cincinnati, Ohio.

August 19

"Esterification and Interesterification," by Marvin W. Formo, Archer-Daniels-Midland Company, Minneapolis, Minn.; "Nitrogen Derivatives," by H. J. Harwood, Armour & Co.; "Fatty Alcohols," by Glenn R. Wilson, Ethyl Corporation, Detroit, Mich.; "Dibasic Acids," by Richard G. Kadesch, Emery Industries; "Plasticizers," by Daniel Swern, Eastern Regional Research Laboratory; "Surface Active Agents," by Alexander J. Stirton, Eastern Regional Research Laboratory; and "Textile Assistants," by E. D. McLeod, Arnold Hoffman & Co., Providence, R. I.

August 20

"Metallic Soaps," by E. F. Wagner, Witco Chemical Company, Chicago; "Lubricating Greases," by E. S. Carmichael, Socony-Vacuum Laboratories, Brooklyn, N. Y.; and "Alkyds and Other Polyester Coating Resins," by Kenneth A. Earhart, Jones-Dabney Division, Devoe & Raynolds Company, Louisville, Ky.

•

Pennsalt to Build 2 New Plants

To provide better customer service for expanding markets for special chemicals, the Pennsylvania Salt Manufacturing Company will add two new plants George B. Beitzel, president of the consolidated company, announced recently. Both plants will serve as major components of the Chemical Specialties Division which is headed by Albert H. Clem, division president.

New plants will be constructed at Delaware, Ohio and at Chicago Heights, Illinois. The new buildings, which will be constructed by J. C. Breyfogle, Industrial Contractor-Builder of Columbus, Ohio, will be modern, one-story brick structures. These plants will serve as primary regional blending, packaging, warehousing and distribution centers. The products they will handle include: cleansing and sanitizing agents for the food industries, farm and home; laundry and dry cleaning chemicals; metal cleaners, coatings and special lubricants for the metal industries and maintenance chemicals. Lewis Lye, Pennsalt's oldest product, will be among the products packaged at the Chicago Heights plant.

• Every now and then a bad batch will go through. Maybe agglomerates were caused by faulty raw materials, or improper setting of the grind. Sometimes a run is contaminated by dirt or other foreign matter.

There's no need to throw that batch away—or ship it and hurt your reputation. You can salvage seedy batches by running them through a Cuno MICRO-KLEAN filter.

Here's what MICRO-KLEAN does for you:

• gives positive removal of all oversize pigments and contaminants.

• provides greater filter capacity for uninterrupted running of larger batches.

• handles #5 grind and up, removing seeds and particles not touched by a centrifuge.

Find out today how the economical, easily installed MICRO-KLEAN can save you money. Write to Cuno Engineering Corp., Dept. 2812-M Meriden, Conn. M.3.12

CUNO ENGINEERED FILTRATION

Hercules Studying Production of PE at Louisiana, Mo. Plant

Hercules Powder Company has begun the production of anhydrous ammonia at the Missouri Ammonia Works at Louisiana, Missouri, and disclosed it is studying possibilities for the production of various other chemicals at the former ordinance plant.

One ammonia line is now operating and the remaining two lines will be brought in within the next few weeks.

Production of other chemicals, among them methanol, formaldehyde, and pentaerythritol, is economically feasible at the plant which lies on the Mississippi River in southeast Missouri, Dr. Wyly M. Billing, general manager of the Hercules Synthetics Department, said.

"We are studying the facilities we have acquired at Louisiana, Missouri, with these chemicals in mind," Dr. Billing said.

"Additional capacity for pentaerythritol at this strategic middle west location would supplement our present pentaerythritol production at Mansfield, Mass.

"One of the three ammonia lines could be very readily converted to the production of methanol.

"We have an economic process with a fully automatic pentaerythritol plant assuring low cost and uniformity of product at our Mansfield plant," Dr. Billing said. "This process could be used also at the Missouri location."

"While the industry is now operating at somewhat less than the rated capacity for pentaerythritol, Hercules feels that it must be ready to expand its production facilities before there is any real shortage of this material so vital to national defense.

"It is obvious that there are many favorable factors present at the Missouri location which makes this study important and timely."

•

Chicago Show to Feature Chemical Transport and Packing Symposium

An important all-day symposium on the transportation, packaging and labelling of chemicals will be presented October 13 during the Eighth National Chemical Exposition in the Chicago Coliseum Oct. 12-15.

The symposium has been arranged with the cooperation of officers of the Manufacturing Chemists' Association, of which William Foster is President and Maurice F. Crass, Jr., executive secretary.

The symposium will cover four major topics:

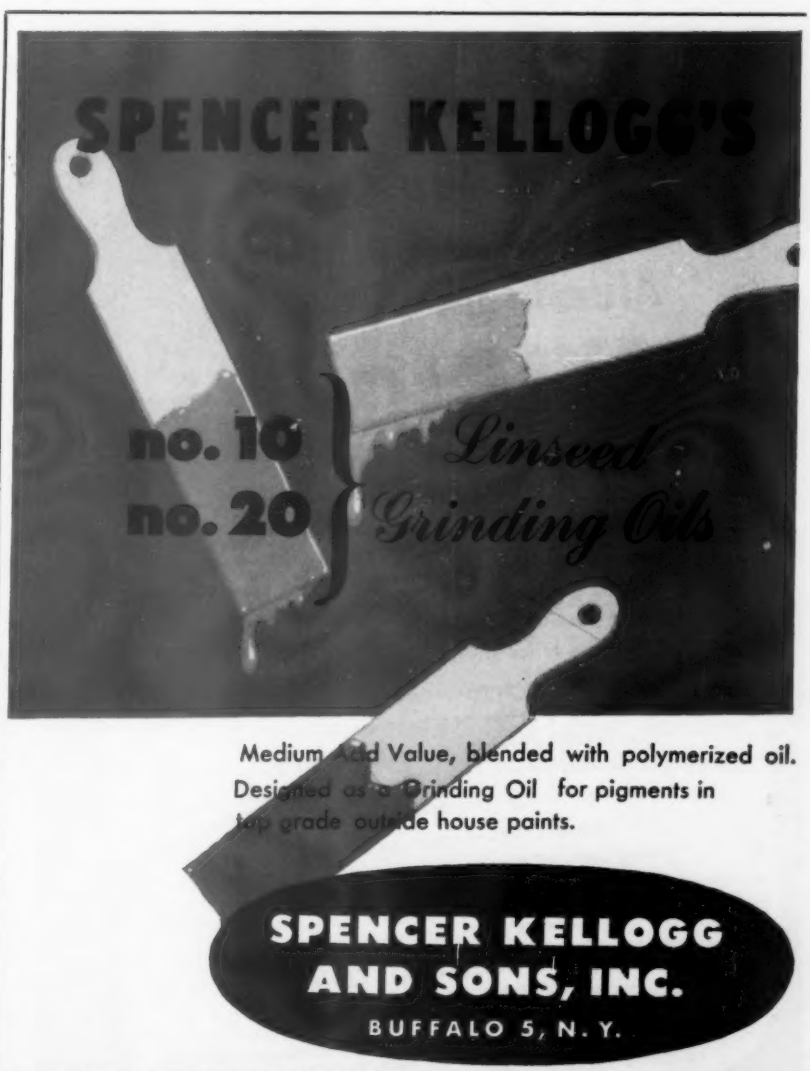
"The Economics of Chemical Transportation" will be discussed by John W. Keeler of Koppers Co., Inc., and Donald G. Ward of Mathiesen Chemical Corporation.

Their papers will cover the broad effect of transportation economics on the chemical industry and the industrial life of the nation, including rate structures, plant locations, population shifts and related subjects.

The panel on "Bulk Transportation of Chemicals" will be divided into three parts, with T. H. Caldwell of Dow Chemical Company discussing tank cars; W. E. Morgan of Union Carbide & Carbon Corporation, tank motor vehicles, and F. G. Moore of Columbia-Southern Chemical Corporation, tank vessels and barges. They will touch on such topics as technological developments, products carried, safety factors and terminal facilities.

The afternoon session will open with a paper on "The Precautionary Labelling of Hazardous Materials" by R. D. Minteer of Monsanto Chemical Company.

The last item of the program will be a panel discussion on "The Smaller Bulk Containers" in which the speakers and topics are: R. H. Long of Harshaw Chemical Co., metal drums and cylinders; L. B. Keplinger of Steel Shipping Container Institute, lining developments, Carl E. Pruett of E. I. du Pont de Nemours & Co., Ltd., plastic containers; H. W. Hamilton of the Chemical Specialty Manufacturers' Association, aerosols; and G. W. Benbury of the Pennsylvania Salt Manufacturing Company, fiber containers.



Special! GRINDING OIL SERVICE Write to the Technical Service Department for help in selecting the right grinding oil to improve paint formulations and paint profits.

Personnel Changes

EL DORADO OIL

Arthur P. Berry has been elected president. He was formerly head of the chemical division, and succeeds James Moller, resigned. **J. W. Howell,** formerly manager of the Bayonne, N. J. plant, has been named vice-president.

CELANESE

Verne Nazarek, has been named assistant to **M. S. Kirpalani,** export manager of Chemical Division. He was formerly Houston sales representative.

GIBSON-HOMANS

James J. Leisy, formerly personnel director and office manager, has been appointed general purchasing agent. He is a veteran of thirty years with the company, and has been its secretary since 1945. In the purchasing post he succeeds **Alwyn J. Morgan,** who has been appointed to manage a sales territory. In addition to the main office and plant in Cleveland, Ohio, and the Hutson Division in Conyers, Ga., the company recently opened a new plant in Matawan, New Jersey.

J. J. Leisy

G. H. Campbell

Arthur Merrit

GOODYEAR

Gordon H. Campbell has been assigned to the southeastern district with headquarters at Charlotte, N. C., and **Arthur Merritt** has joined the New England district, with headquarters at Hartford, Conn. Both appointments are in the Chemical Division.

DEVOE & RAYNOLDS

James L. Hobart has been appointed assistant to the vice-president, Trade Sales Division, according to an announcement from George P. Gray, vice-president. Prior to this appointment he was assistant manager, Central District. He has had wide experience in dealer and distributor sales. He is a graduate of the University of California, and the Harvard Graduate School of Business Administration. He resides in Old Greenwich, Conn., and is married and has three children.

J. L. Hobart

SINCLAIR CHEMICALS

T. H. Paulsen, formerly assistant to the vice-president in charge of manufacturing and cost estimation, has been appointed Chief Process Engineer. **Robert C. Sweeney,** formerly market analyst of the Market Development Department has been appointed assistant manager of this department.

JAMESON CHEMICAL

Woodrow W. Wibel has been appointed to the sales department, according to an announcement from A. R. Jameson, president. He previously had been chief engineer for Globe Corp., Joliet, Ill. and salesmanager of E. J. Perry Corp., Fall River, Mass.

FERRO

J. C. Wessel has been appointed controller, according to an announcement from G. E. Weber, treasurer. He joined the company in 1948, and was previously associated with A. W. Hecker Co., Cleveland.

NOW You Can Stop Pressure Build-Up in Aluminum Paints With SYLOID® AL-1

Tests conducted by the Aluminum Research Laboratories of Aluminum Company of America ". . . indicate that SYLOID AL-1, when used in concentrations up to 1% based on total weight of paint, effectively retards pressure development in ready-mixed varnish base aluminum paint containing moisture in concentrations up to 0.5%."

This problem of pressure build-up in ready-mixed aluminum paints has long been a serious one. Now this pressure development can be stopped. The leaf stability of the paint is not affected and the drying rate is not retarded.

For complete information on SYLOID AL-1, including results reported by Aluminum Research Laboratories, write

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.

Baltimore 3, Maryland

PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, TRIPLE SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, AND SILICOFLUORIDES. SOLE PRODUCERS OF DAVCO® GRANULATED FERTILIZERS

- SPECIFICATIONS?
- AVAILABILITIES?
- MARKET PRICES?
- WHICH OIL TO USE?
- HOW TO SAVE MONEY?
- HOW TO GET BETTER RESULTS?

WHAT DO YOU WANT TO KNOW ABOUT VEGETABLE OILS?

YOUR LOCAL...

PACIFIC VEGETABLE OIL CORP.

... representative can give you the right answers. Call him today.

PVO OILS VARNISH PAINT & PACIFIC VEGETABLE OIL CORP.

62 Townsend Street
San Francisco 7, Calif.

3135 East 26th Street
Los Angeles 23, Calif.

INDUSTRIAL OILS:

Linseed, Tung, Safflower, Soya, Oiticica, Castor, Sardine. Also Coconut oil, Tallow, Cottonseed oil, Lard, Walnut oil and others.

1 ATLANTA, GEORGIA
G. R. Nottingham

2 BALTIMORE, MARYLAND
W. R. McClayton & Co.

3 CHICAGO, ILLINOIS
Daniel G. Herely Co.

4 CLEVELAND, OHIO
Donald McKay Smith Co.

5 DALLAS, TEXAS
W. W. Richerson

6 DETROIT, MICHIGAN
George E. Moser & Son, Inc.

7 HOUSTON, TEXAS
Texas Solvents & Chemicals Co.

8 KANSAS CITY, MISSOURI
Ack Sales Company

9 LOS ANGELES, CALIFORNIA
California Flaxseed Products Co.

10 LOUISVILLE, KENTUCKY
B. H. Boyet & Co.

11 MILWAUKEE, WISCONSIN
J. W. Copps

12 MINNEAPOLIS, MINNESOTA
Horton Earl Co.

13 MONTREAL, QUEBEC, CANADA
B. & S. H. Thompson & Co. Ltd.

14 NEW ORLEANS, LOUISIANA
Russell Chemical Co.

15 NEW YORK CITY, N. Y.
Garrigues, Stewart & Davies, Inc.

16 PHILADELPHIA, PENNSYLVANIA
Baker Industrial Oils Co.

17 PITTSBURGH, PENNSYLVANIA
Emmett D. Griffin, Jr.

18 SAN FRANCISCO, CALIFORNIA
Pacific Vegetable Oil Corp.

19 SEATTLE, WASHINGTON
W. Ronald Benson, Inc.

20 ST. LOUIS, MISSOURI
Ivan T. Bauman Co.

21 TORONTO, ONTARIO, CANADA
B. & S. H. Thompson & Co. Ltd.

NATIONAL ANILINE

A. E. Cleghorn has been named to the newly created post of Executive Vice-President of this division on Allied Chemical & Dye Corporation, according to an announcement by D. G. Rogers, division president. He has been associated with the parent company in the controllers department as assistant controller since 1933, and has been with the National Aniline division since 1952 as assistant to the president, and subsequently as vice-president.

A. E. Cleghorn

NATIONAL CAN

W. H. Funderburg has been appointed a member of the sales research committee, according to an announcement from Robert S. Solinsky, president.

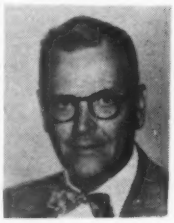
GE

Richard J. Thompson has been appointed salesman alkyd resin products sales, Chemical Materials Department. He formerly was associated with Trojan Powder Company as technical sales representative.

COLLEDGE

John R. Garrason has been appointed vice-president and sales manager, according to an announcement by P. E. Sprague, vice-president of the Glidden Co. **Robert F. Colyer** has rejoined the company on the sales staff.

G. E. Snider



J. H. B. Marple

A. F. Williams

COMMERCIAL SOLVENTS

Geoffrey E. Snider has been named manager of the Boston district office. He was formerly manager of Louisville office. **J. H. Brinton Marple** has been appointed to the Louisville office. **Arthur F. Williams** has replaced Mr. Marple.

R-B-H

Bertil Breskey has been appointed sales representative in the Metropoliton New York area. Prior to joining the company he was associated with Standard Coated Products, Inc., Buchanan, N. Y. He received his degree in chemistry from Chalmers Technical Institute, Gothenburg, Sweden. Later he studied in Germany at the Dresden Art Academy, in an I. G. Farben laboratory for familiarity with pigments and dyes, and at Strassburg, France for study of wallpaper and gravure printing machines.

Bertil Breskey

HERCULES

Clifton S. Skow has been appointed a technical sales representative in the New York Synthetic Department. **Edwin S. Moler, Jr.,** and **Robert C. Bogott** have joined the development group of the Synthetic Department.

CELANESE

Jack T. D. Cornwell has been appointed advertising and sales promotion manager, Chemical Division. He had previously been an account executive of Hazard Advertising Agency.

1-12 gallon sizes
VULCAN
Service
MEETS YOUR INDIVIDUAL REQUIREMENTS As an experienced independent manufacturer of top quality steel pails, Vulcan has the knowledge and flexibility to provide you with pails to your specifications, in quantities most convenient for your use, and to make smaller or larger shipments at the intervals specified. All trade sizes are carried in stock.
The Vulcan plant is large, modern, and completely equipped with automatic machinery and oven facilities. The Vulcan Engineering Staff is expert, experienced and accustomed to making changes with minimum effort and delay. Modern techniques are used in manufacturing processes and Vulcan supplies a range of sizes, spouts, fittings, Hi-Bake protective linings and expert lithography to exactly meet your needs.
DRUM-TYPE CLOSED-HEAD CONTAINERS—Drum type containers are furnished in all practical sizes and with popular pouring nozzles and spouts. Request full details.
Over 30 years of Top Quality Containers
"It's Better to Ship in Steel"
VULCAN STAMPING & MFG. CO.
Box 161, Bellwood, Illinois (Suburb of Chicago)
In Toronto, Canada—Vulcan Containers Limited, Representatives in all Principal Cities

COMMERCIAL SOLVENTS

James A. Farley has been appointed field sales manager of the Industrial Chemicals Sales Department, according to announcement from F. E. Maple, general manager of the department. This is a new post, in which Mr. Farley will be responsible for the administration of the district offices throughout the country. He has been with the company since 1935, most recently as district manager of the Boston office. Headquarters will be at the executive offices in New York City.

J. A. Farley

BRONOCO

E. A. Coons has been appointed vice-president and general manager, according to an announcement from R. J. Brown, president. He is a CE graduate of Rose Polytechnic Institute.

NATIONAL CAN

I. L. Holtz has been appointed general sales manager—eastern division. He is a graduate of St. Johns and St. Lawrence Universities, and a member of the New York Paint, Varnish and Lacquer Association.

STAR BRONZE

Richard Lytle has been appointed a partner. He recently joined the company after a tour of duty as 1st Lt. in the U. S. Army, and will act as assistant sales manager.

ATLAS

Edward J. Goett has been appointed director of the Commercial Development Department. For the past 12 years he was associated with Charles Pfizer Co.

MONSANTO

John F. Palmer, Jr. has been appointed director of the research group, of the organic chemicals division. The new group will specialize in customer service application studies with polyester resins and to develop new and improved processes and products.

GEORGIA MARBLE

John W. Dent has been elected executive vice-president. He had previously been vice-president and head of the calcium products division. **T. J. Durrett,** vice-president, will head the latter division. **Ashton E. Garner** continues as sales manager, and **E. C. McDonald** as research director.

MARBON

Dr. Andrew P. Ting and **T. C. Alexander** have been appointed to the chemical research laboratories, according to an announcement from D. M. Pratt, vice-president and sales manager.

VELSICOL

W. K. McCready has been appointed director of manufacturing. He was formerly manager of the Memphis plant. **Richard R. Schwankl** has been appointed assistant director of manufacturing. He has been with the firm for the past 7 years, starting in the accounting dept.

NATIONAL CAN

S. V. O'Donnell has been appointed sales manager—western district. He has been associated with the company for twenty-five years.

NATIONAL STARCH

Robert DeWolfe has been appointed supervisor of New York sales. His duties are to be responsible for adhesive sales in New York City and state and northern New Jersey, which will permit Lester Klempner, eastern sales manager, to devote more attention to overall eastern sales. He was graduated from Wheaton College with the degree of BA, and joined the company soon after. He had previously been covering north Jersey territory. He is married and lives in Closter, New Jersey.

Robert DeWolfe

SHAWINIGAN

vinyletter no. 2

Helpful Technical and Marketing Data on Polyvinyl Acetate Emulsions and Paints

how to improve PVAc paints: Paint industry technical and marketing men are hearing conflicting reports of performance of polyvinyl acetate emulsion paints. Facts are these—results vary according to type of emulsion used, and equally important, soundness of formulating advice. When both are right, PVAc paints prove outstanding performers. Shawinigan offers paint men: (1) GELVA TS-22, the only PVAc emulsion with five-year history of successful commerical exposure in paints; (2) a practical PVAc formulating service unique in the industry.

built-in water resistance: GELVA TS-22 is "free-filming"—that is, dried film will not reemulsify in water. This characteristic contributes vitally to utility of final formula—creates built-in water resistance without use of costly solvents necessary with some other emulsions.

custom plasticizing: Another important point—GELVA TS-22 is not preplasticized. Chemist controls plasticizer addition according to varying requirements of formula. Experience demonstrates paints thus plasticized have withstood five years' commercial exposure. Custom plasticizing actually saves formulator 6c or more per gallon of finished paint . . . allows him greater formulating versatility.

knowledge at your service: Shawinigan offers data on pigmentation, stability, durability of GELVA Emulsion paints based on five years' successful commercial exposure. Also offers samples of GELVA TS-22, suggested interior or exterior formulae, other pertinent literature. Send coupon.

Published by SHAWINIGAN *Producers of GELVA, the Only Polyvinyl Acetate Emulsion with More Than Five Years' Commercial Exposure in Paints*

SHAWINIGAN PRODUCTS CORPORATION
350 Fifth Ave., New York 1, N. Y.
At no obligation send:

mail GELVA TS-22 Sample ..... Literature ☐ Interior ☐ Exterior

Name ..... Title .....
Company .....
Street .....
City ..... Zone ..... State .....

Joseph Close

T. J. Kroetch

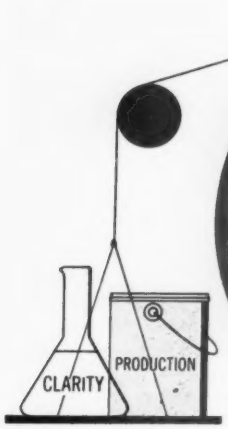
GENERAL PAINT

Joseph Close has been appointed Market and Sales Analyst. He was formerly connected with Honig-Cooper Co. **T. J. Kroetch** has been appointed Supervisor of branch and dealer operations. He has spent 15 years in sales and merchandising in the paint industry.

BRANDRAM-HENDERSON

V. H. Vedda has been appointed vice-president in charge of research and production. He joined the firm in the fall of 1952. Prior to that he was plant superintendent of the A. C. Horn Co., Long Island City, N. Y., and supervisor of all mixing and grinding operations. Previously he was associate head of the Insulation Department of Centro Research Laboratories. He received his education at Columbia University, New York and graduated in 1942 with a B. S. degree.

V. H. Vedda



CLARITY and PRODUCTION both are kept high with DICALITE FILTERAIDS

Paint industry liquids are not easy to filter, because most of the impurities are gummy and viscous. But Dicalite takes the job in stride, keeping production up and delivering brilliant clarity in varnishes, dopes, lacquers and shellac, because Dicalite provides a full range of filteraids to meet practically every requirement of the paint industry.

Dicalite engineers have worked out the problems with many paint and varnish manufacturers who can testify to the efficiency of Dicalite filteraids in the production of linseed oils; cobalt, manganese and lead tallate driers, and paints, as well as the products mentioned before. Their recommendations, together with other valuable data on filtration, is available on request.

DICALITE DIVISION
GREAT LAKES CARBON CORP.
612 SO. FLOWER STREET
LOS ANGELES 17, CALIF.

Dependable GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

NEWS DIGEST

Albert C. Wedemeyer

Gen. Wedemeyer Named Vice Pres. of Rheem Mfg.

The election of Lieutenant General Albert C. Wedemeyer (USA, Ret.) as a vice-president and director of Rheem Manufacturing Co. was announced recently by Richard S. Rheem, president, following a special meeting of the board of directors in San Francisco.

Mr. Rheem said that Gen. Wedemeyer will assume his new responsibilities Sept. 1 and will make his headquarters at the company's New York executive offices at 477 Madison Avenue.

•

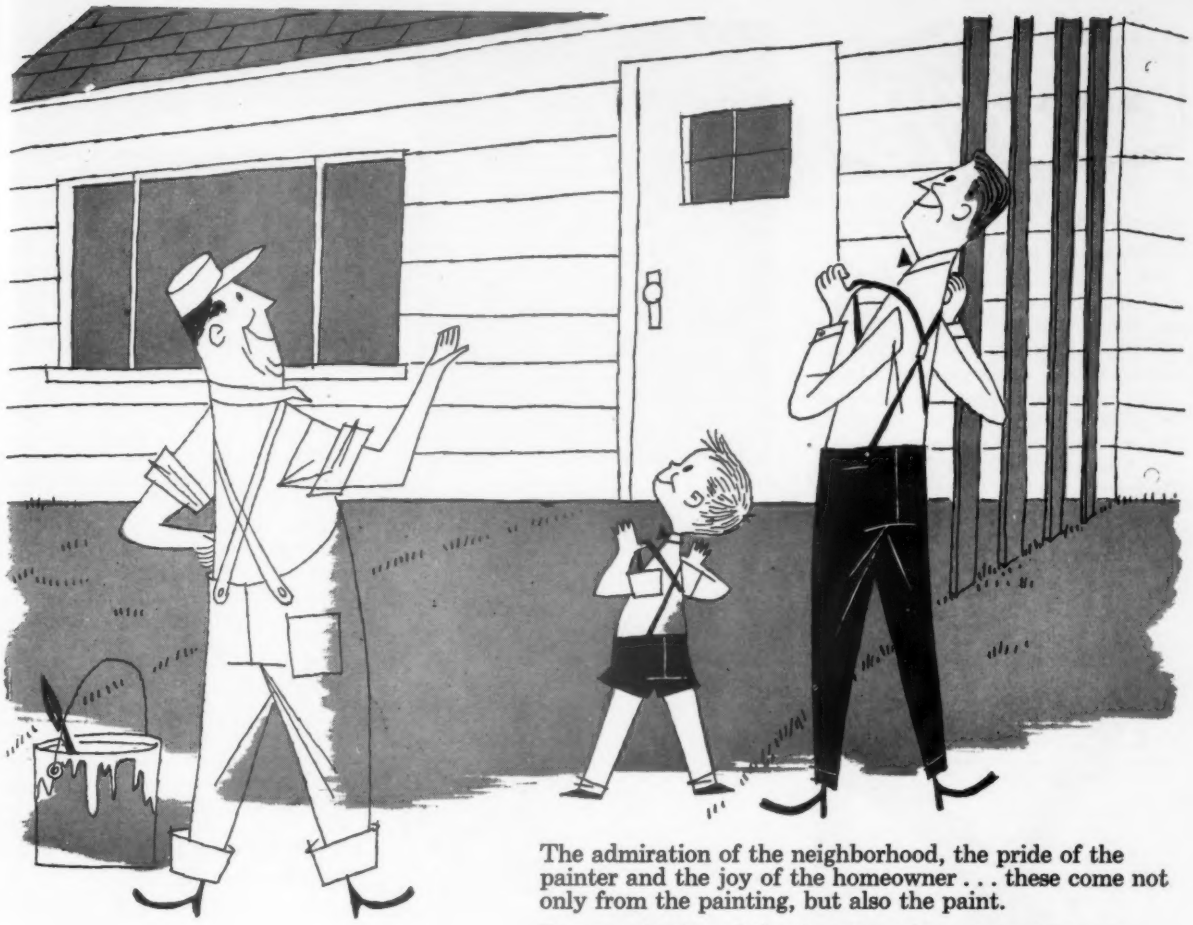
H. G. Schafer of Athey Paint Retires After 35 Yrs. of Service

Harry G. Schafer, for 35 years Superintendent of the C. M. Athey Paint Co, retired July 2nd after serving the Baltimore Paint Industry for more than 50 years.

Mr. Schafer started working when only 12 years old and worked with the Hanline Paint Co., the Hirshberg Paint Co., and the H. B. Davis Co. before joining the C. M. Athey Paint Co. as plant superintendent.

He is a charter member of the Baltimore Paint and Varnish Production Club and application is being made for his admission to the 50 Year Club of the National Paint Varnish and Lacquer Ass'n.

The employees and the management of the C. M. Athey Co. had a get-together at which they presented Mr. Schafer with several gifts and testimonials for his long and faithful service.



pride in the paint job begins with TITANOX® in the paint

The admiration of the neighborhood, the pride of the painter and the joy of the homeowner . . . these come not only from the painting, but also the paint.

Proper selection of the titanium pigment content—an indispensable part of today's paints—means the choice of TITANOX® titanium pigments to put more pride into the paint for everybody.

These pigments are offered in a range from chalking type anatase—TITANOX-AMO to highly chalking-resistant rutile—TITANOX-RA-NC, plus the unique titanium calcium pigment—TITANOX-RCHT.

You can readily select the types and proportions of these pigments best suited to the qualities needed in your exterior paints for your market. And our extensive experience covering many years of testing and observation of exterior paints of all kinds in many different localities is waiting to serve you. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

®TITANOX

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

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Goodyear Honors Dr. R. P. Dinsmore for 40-Yr. Service

Dr. R. P. Dinsmore, vice president in charge of research and development for The Goodyear Tire & Rubber Company, received a 40-year service pin at special ceremonies in Akron.

The long-term emblem was presented by Board Chairman P. W. Litchfield while nearly 1,000 of Dinsmore's associates witnessed the event in Goodyear Theater.

Dr. Dinsmore was also honored at a testimonial dinner which was attended by more than 300 persons, including many of the industry's key figures here in the Rubber Capital and from other parts of the country.

P. W. Litchfield presents Goodyear 40-year pin to Dr. R. P. Dinsmore.

Principal speaker at the banquet was Dr. Webster N. Jones, vice president in charge of industrial and government relations for Carnegie Institute of Technology in Pittsburgh, Pa.

In recognition of his work in synthetic rubber research, its development and application to products, Dr. Dinsmore was awarded the Colwyn Gold Medal in London in 1947. The award is sponsored by the Institution of the Rubber Industry.

During World War II, Dr. Dinsmore served as assistant deputy rubber director for the United States until May 1943. He organized and directed research and development work on synthetic rubber for the government, and coordinated the activities of both industrial and university laboratories.

The veteran scientist holds membership in several important organizations including the Royal Society of Arts, the American Academy of Political and Social Science and the American Chemical Society.

Dr. Dinsmore has authored numerous articles dealing with the technical and economic problems allied with synthetic rubber.

•

Battelle Investigating Steel Pipe Corrosion for AISI

A research program to determine the possibility of using organic coatings to protect steel pipe against corrosion in domestic water systems is being conducted at Battelle Memorial Institute, Columbus, Ohio. The program, sponsored by the American Iron and Steel Institute, is under the supervision of E. R. Meuller.

At present, a survey is being made of available materials. This will be followed by a study of those that appear to meet requirements and which could be applied at a cost competitive with coatings now in general use.

•

K. R. Burke of Koppers Retires

Widely known for his authoritative knowledge of coal tar refining processes, Kenneth R. Burke, retired recently after an active 38-year career with Koppers Company, Inc.

A vice president of Koppers Tar Products Division since 1938, Mr. Burke for the past three years has been responsible for the operations of the company's 19 tar refining plants and two tar products specialty plants located from Massachusetts to Texas and from New Jersey to California.

In addition to plant operations, Mr. Burke also has guided the activities of the technical, engineering, and production planning departments.

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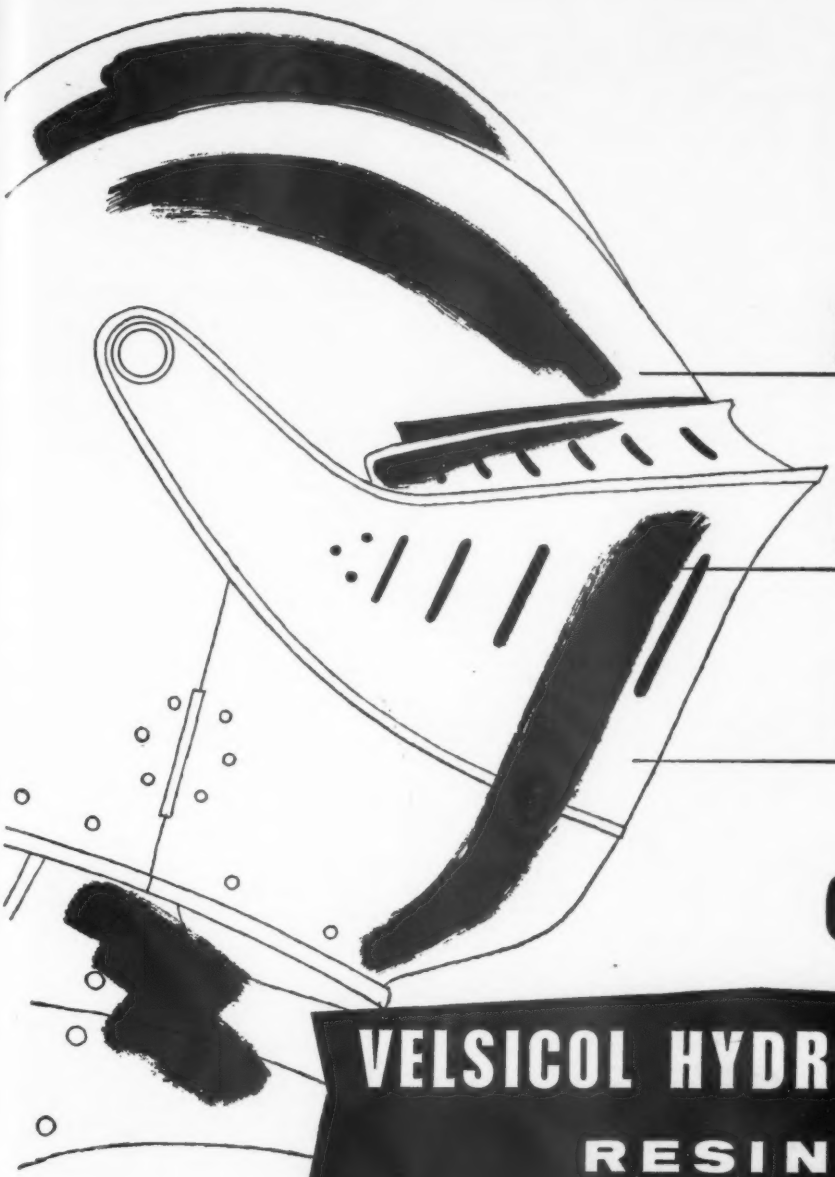

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REPRESENTATIVES IN PRINCIPAL CITIES

Chemical Institute of Canada Announces Election of Officers

Adolph Monsaroff of Montreal was elected Chairman of the Board of Directors of The Chemical Institute of Canada. Mr. Monsaroff, is vice-president of Monsanto Canada Limited. His election was announced here today during the Institute's 37th Annual Conference and Exhibition.

Mr. Monsaroff succeeds retiring-Chairman Ludvig Firing of Montreal.

Other Directors elected at this Conference were:

Treasurer - T. H. G. Michael of Howards & Sons Canada Ltd., Cornwall; director of Membership - W. H. Arison, Hiram Walker & Sons Ltd., Walkerville; Associate Director of Membership - E. A. Crockett, Polymer Corp. Ltd., Sarnia; Director of Professional Affairs - Frank K. Rogers, Shawinigan Chemicals Ltd., Montreal; Director of Provincial Branches - Pierre R. Gendron, University of Ottawa, Ottawa; Associate Director of Scientific Affairs - R. H. Manske, Dominion Rubber Co. Ltd., Guelph; Director of Scientific Affairs - Fred W. Matthews, Canadian Industries Ltd., Beloeil; and Director of Publicity and Publications - Charles M. Skinner, Sherwin-Williams Co. Ltd., Montreal.

Three new directors were appointed to replace retiring directors A. E. R. Westman, Ontario Research Foundation, Toronto, formerly Director of Scientific Affairs and National Meetings; F. J. Toole, Department of Chemistry, University of New Brunswick, Fredericton; and G. S. Ortner, Consolidated Mining & Smelting Co., Trail, both formerly Associate Directors of Membership. The three new members of the Board are Mr. Crockett, Dr. Matthews and Mr. Skinner.

•

Glidden Integrates 5 Operations

Integration of five major industrial-agricultural operations of The Glidden Company into a newly-created Chemurgy Division was announced recently by Dwight P. Joyce, Glidden president.

This decision is based upon The Glidden Company's recognition of the tremendous importance of the growing industrial-agricultural science known as chemurgy, and a need to coordinate all our activities in that field, "Mr. Joyce said.

"Such coordination is expected to foster many new developments in the utilization of agricultural products for industrial use through chemistry," he added.

Glidden's new Chemurgy Division is headquartered in Chicago, with Mr. Willard C. Lighter, Glidden vice president, as executive in charge.

The highly diversified Glidden Company has for years manufactured a host of products from soybeans, flaxseed, safflower seed and related farm products. The aptly-named Chemurgy Division now consolidates all of these activities.

•

"Kady" Mill Discussed at June Meeting of L. A. Club

The June meeting of the Los Angeles Production Club featured at talk on the "Kady" mill by Charles F. Kew, president of Kinetic Dispersions, Inc.

Mr. Kew stated that centrifugal versus tangential forces dictated small rotor sizes. Tests have shown that rim speeds below 7000 feet per minute and above 15,000 feet per minute do not disperse. 8,000 to 10,000 feet per minute seems to be the optimum range with present design running at 9,000.

High solids versus low solids dispersion techniques were discussed and Mr. Kew suggested that both have their places in practical operation. Mr. Kew also pointed out that gloss types require low binder content and flats work just as well with high binder content. Certain pigments seem to have a critical minimum binder content for dispersion.

Mr. Kew also discussed particle size agglomerates and showed why the regular grind gauge readings did not always correlate with gloss of the finished product, particularly with the "Kinetic" type dispersion.

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NEWS DIGEST

NYU Announces Fall Finishes Courses

The Graduate Division of the College of Engineering, New York University, has announced the surface finishes courses for the fall term:

Ch. E. 174-175. Surface Finishes. Prerequisite Ch. E. 71-85 or equivalent. Dr. Kronstein. Full Course, first and second terms.

A study of the principles involved in protective, decorative, and functional finishing. Economic factors. Forms of finishing problems. Types of surfaces, types of finishes, methods of application. Specifications, test methods, research, production, and control methods. Advanced finishing problems.

This course will be conducted on Fridays at 6-8 P.M. at Washington Square.

Ch. E. 176-179. Surface Finishes Laboratory. Prerequisite Ch. E. 174-175 or Ch. E. 174-175 being pursued simultaneously. Dr. Kronstein. Full course, first and second terms.

A laboratory introduction to the basic processes of decorative and protective finishing. The various methods of evaluation and testing surface-finishing products and their application are studied. This course will be given if there is sufficient registration.

The laboratory course will be held at the Surface Technology Laboratory, 401 W. 205th St., Manhattan. Time will be designated at later date.

The date for registrating in the fall term will be held Sept. 20-24, 1954. Registration takes place in the office of the Graduate Division on the first floor of South Hall from 6:30 to 8:30 p.m. During registration periods, the various departmental chairmen and advisers will be available for consultation.

Students may not register after stated periods except by special permission of the assistant dean in charge.

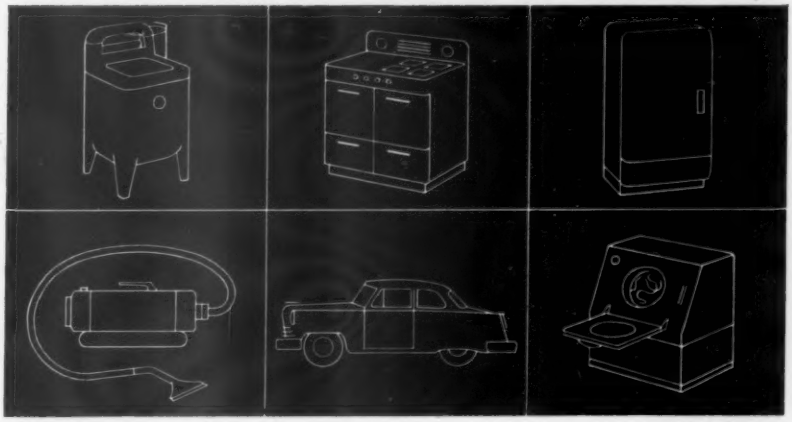
For further information contact H. Masson, assistant dean, Graduate Div., College of Engineering, New York University, New York 53, N. Y.

•

Penna. Industrial Chemical Open Detroit Sales Office

Pennsylvania Industrial Chemical Corporation, of Clairton, Pennsylvania, announces the opening July 1, 1954 of the company's Detroit District Sales Office, at 500 Griswold Street, Detroit 26, Michigan. Sales activities from this office will cover the states of Ohio, Kentucky, Michigan and part of Indiana.

E. A. Rueve (left) of Toledo, Ohio and J. P. Schoen (center) of Amsterdam, The Netherlands were recepients of the Nuodex award for excellence in the beginners' and advanced paint courses at North Dakota Agricultural College. Both students received a complete set of the Mattiello series. Dr. Wouter Bosch (right) is chairman of the Dept. of Paints at N. Dakota.



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Fire Retardant Coating

U. S. Patent 2,679,489. George L. Cunningham, Cincinnati, Ohio, assignor to Waterloo Corporation, New York, N. Y., a corporation of New York.

1. A paint-like flame-retarding coating composition which comprises in an aqueous medium formaldehyde, urea, in amount by weight equal to from 100% to 300% of the formaldehyde content of the composition, a member of a flame-retarding group consisting of the ammonium and zinc salts of the orthophosphates and borates in amount by weight equal to from 200% to 400% of the urea content, a thickening agent stable in 0.1% to 5.0% of the total mixture, a finely divided inert, inorganic, solid in amount by weight equal to from 50% to 150% of the urea content and hexamethylene tetramine in amount by weight equal to from 5% to 50% of the formaldehyde content of the composition.

2. The composition of claim 1 in which the thickening agent is carboxy methyl cellulose.

Tall Oil Rosin Sizes

U. S. Patent 2,680,694. Justus C. Barthel and Randall Hastings, Stamford, Conn., assignors to American Cyanamid Company, New York, N. Y., a corporation of Maine.

A storage-stable dry rosin size consisting essentially of the dry saponification product of rosin remaining after the removal of the fatty acids from tall oil by fractional distillation, said size containing about 0.5-2% of phenothiazine and about 0.2-2% of a diarylamine based on the weight of said rosin.

Siloxane Waterproofing Material

U. S. Patent 2,679,495. Raymond H. Bunnell, Toledo, Ohio, assignor, by mesne assignments, to Allied Chemical & Dye Corporation, New York, N. Y., a corporation of New York.

A coating composition of improved stability that forms water-repellent coatings of superior permanency, comprising a siloxanol whose molecules consist of silicon atoms to which are attached (1) OH groups, (2) oxygen linkages connecting silicon atoms, and (3) secondary amyl radicals, any additional radicals attached to the silicon atoms being (4) primary alkyl radicals having from one to six carbon atoms, the average number of the radicals (4) attached to each silicon atom being from 0 to 0.9, the average number of the radicals (3) attached to each silicon atom being from 0.3 to 0.75, the average total number of the radicals (3) and (4) attached to each silicon atom being not greater than 1.2, and not less than 30 per cent of said silicon atoms having the radicals (3) attached thereto.

Polytetrafluorethylene Coating

U. S. Patent 2,681,324. Seymore Hochberg, Upper Darby, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware.

A liquid coating composition comprising an aqueous dispersion of polytetrafluoroethylene containing a wetting agent and an aqueous dispersion of another resinous polymerized ethylenically unsaturated material, the second mentioned aqueous dispersion and said coating composition each having the property of drying at a temperature

Chats about Finishes

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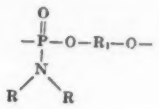
of at least 100°C. in one coat to a crack-free film having a thickness greater than the critical cracking thickness of said aqueous dispersion of polytetrafluoroethylene alone.

Linear Polymer

U. S. Patent 2,682,521. Harry W. Coover, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N. Y., a corporation of New Jersey.



U. S. Patent No. 2,682, 521

A resinous, linear polymeric amidophosphonate comprising the recurring structural unit wherein R represents a member selected from the group consisting of an alkyl group containing from 1 to 4 carbon atoms, a phenyl group and a cyclohexyl group and R_1 represents an aromatic group selected from the group consisting of a phenylene group, a diphenylene group and a diphenylene sulfone group.

Temporary Protective Coating

U. S. Patent 2,680,724. Richard D Oppenheim, Roslyn Heights, N. Y., assignor to Spraylat Corporation, New York, N. Y., a corporation of New York.

A composition for forming temporary strippable protective coatings on finished surfaces, comprising a plasticized polyvinyl butyral dispersed in water containing as dispersing agents mahogany sulfonates corresponding to the formula $CnH_{2n-10}SO_3Na$, wherein n is in the range of 20-30 and the average molecular weight is in the range of 400-600, said composition having a substantially neutral reaction and containing 2-16.5 parts of a stripping agent selected from the group consisting of soya lecithin and solid polyoxyethylene glycol, for 100 parts of the polyvinyl butyral.

Polyvinyl Acetal Resin

U. S. Patent 2,682,520. Charles Kilbourne Bump, Hampden, and Frank J. Quinn, Springfield, Mass., assignors to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A composition of matter comprising a polyvinyl acetal resin and 0.2 to 3 parts per 100 parts of said resin of a divalent heavy metal salt of fluorboric acid.

A composition of matter comprising a mixture of xylene and butanol having dissolved therein a polyvinyl butyral resin and 0.2 to 3 parts of tin fluorborate per 100 parts of said resin.

Floor and Wall Coating

U. S. Patent 2,682,517. Annis G. Asaff, Auburndale, Mass., assignor to Callaghan-Hession Corporation, Boston, Mass., a corporation of Massachusetts.

A surface coating mastic composition comprising mixture of aggregate filler material and a vehicle comprising about 25 parts by weight of vinyl acetate-vinyl chloride copolymer dissolved in about 100 parts by weight of a solvent comprising about 70 per cent by weight of a liquid aromatic hydrocarbon and about 30 per cent by weight of a ketone, and a solution containing about 1/3 water and about 2/3 of an aliphatic alcohol having less than 4 carbon atoms in an amount sufficient to cause a two-phase separation of said mixture to produce a plastic cohesive phase of such non-sticky character that it can be spread with a trowel.

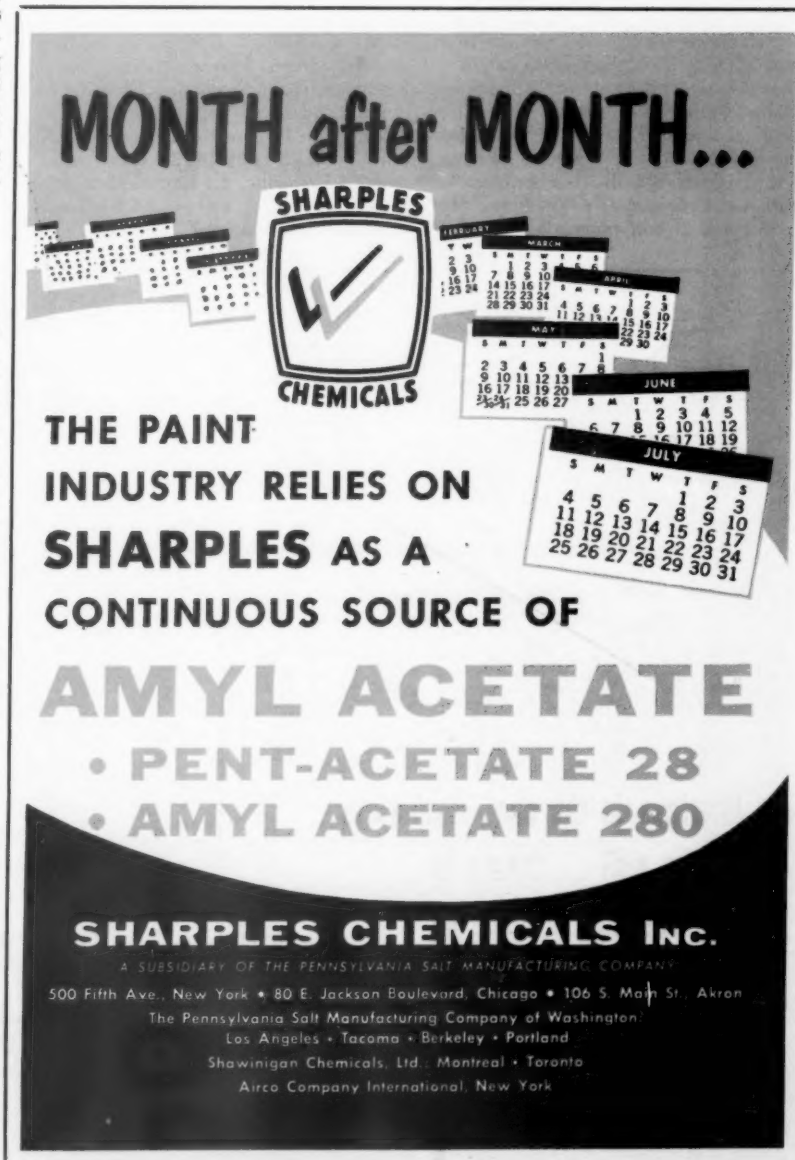
Silicate Coating

U. S. Patent 2,680,725. Charles Di-Battista and Egidio James Di Battista, Cranford, N. J.

A coating composition comprising an aqueous solution of potassium silicate of 15° to 25° Be. as a vehicle and containing about 8 to about 11 pounds, per gallon of vehicle, of a composite pigment mixture composed of the following materials in proportions by weight within the indicated ranges:

	Parts
Silica	40 to 70
Barium sulfate	25 to 40
Titanium oxide	5 to 20

and 4% to 10%, based on the volume of the composition of an emulsion composed of about equal proportions by volume of a rubber latex and an oil of the class consisting of animal and vegetable oils.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Modified Polyether

U. S. Patent 2,682,514. Herbert A. Newey, Lafayette, Calif., assignor to Shell Development Company, Emeryville, Calif., a corporation of Delaware.

A composition comprising an epoxidized carboxylic acid ester containing a plurality of non-terminal epoxy groups in the acyl groups thereof in admixture with glycidyl polyether of a polyhydric phenol having a 1,2-epoxy equivalency greater than 1.0.

Cross-Linked Polyamides

U. S. Patent 2,682,524. Donald D. Coffman, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware.

A cross-linked polyamide which is the product obtained by reacting a diester of oxalic acid with a polymeric polyprimary amine having a molecular weight in excess of 1000 and having a main chain consisting solely of carbon atoms with at least three extra-catenic primary amino nitrogens each directly attached by a single bond to the main carbon chain, said polymeric polyprimary amine being the product obtained by the reductive amination with ammonia and hydrogen of a copolymer of ethylene and carbon monoxide.

Surface Coatings Composition

U. S. Patent 2,681,897. Charles Frazier, Brooklyn, N. Y., and Leonard E. Cadwell, Stamford, Conn., assignors to American Cyanamid Company, New York, N. Y., a corporation of Maine.

A composition of matter comprising a compatible mixture of 5-40% by weight of a thermosetting alcohol-modified aminoplast resin and 95-60% by weight of a thermoplastic copolymer of (1) an hydroxy alkyl ester of an alpha beta ethylenically unsaturated carboxylic acid and (2) a compound containing a $CH_2=C<$ group, wherein the ratio of (1):(2) on a mol percent basis is 5:95-50:50, respectively, wherein the hydroxy group of (1) is a part of a—CH_2OH group and compound (2) is devoid of any hydroxy group wherein said aminoplast resin is the condensation product of an aldehyde and a compound selected from the group consisting of urea, melamine, dicyandiamide, formoquanamine, benzoguanamine, ammeline, 2-chloro-4,6-diamino-1,3,5-triazine, 2-phenyl-p-oxy-4,6-diamino-1,3,5-triazine, 6-methyl-2,4-diamino-1,3,5-triazine, 2,4,6-trihydrazine-1,3,5-triazine, 2,4,6-triethyl-triamino-1,3,5-triazine, and 2,4,6-triphenyl triamino-1,3,5-triazine.

Vinylidene Chloride Compositions

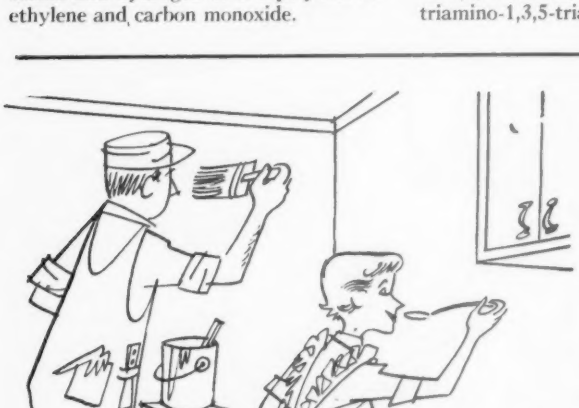
U. S. Patent 2,680,106. Carl B. Havens, Hope, Mich., assignor to The Dow Chemical Company, Midland, Mich., a corporation of Delaware.

A composition of matter consisting essentially of the copolymer of from 88 to 94 per cent vinylidene chloride and correspondingly 12 to 6 per cent vinyl chloride and from 0.5 to 5 per cent of the weight of the composition of tetrasodium pyrophosphate, from 1 to 5 per cent by weight of acetyl triethyl citrate, and from 2 to 6 per cent by weight of salol, the aggregate amounts of the citrate and salol not exceeding 9 per cent of the composition by weight.

Flameproofing Material

U. S. Patent 2,680,077. Morris L. Nielsen and Russell W. Arnold, Dayton, Ohio, assignors to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware,

An intumescing fire-retarding composition composed of the water-insoluble reaction product of phosphoryl chloride and anhydrous ammonia, said water-insoluble product having a nitrogen/phosphorus ratio between 1.72:1 and 1.80:1, in combination with an alkyd resin having free hydroxy radicals.



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Interlinking Polymers With Polyactams

U. S. Patent 2, 682,526. Paul J. Flory, Ithaca, N. Y., assignor, by mesne assignments, to The Goodyear Tire & Rubber Company, a corporation of Ohio.

A method for increasing the molecular weight of a performed polyester containing, as the only reactive groups therein, at least two hydroxyl radicals which comprises mixing and reacting a major proportion by weight of said preformed polyester with a minor proportion by weight of a polylactam in which at least 2 lactam radicals are linked through their nitrogen atoms by an acyl radical of a polycarboxylic acid, each of the carbonyl groups of the acyl radical being thus attached to a lactam radical and said polylactam being free from reactive substituents.

Cross-Linked Polymers

U. S. Patent 2,682,525. Harold L. Jackson, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del., a corporation of Delaware.

A cross-linked polymer which is the product obtained by reacting, at a temperature of 25 to 200°C., a polymeric polyprimary amine having a molecular weight of at least 1000 and a main carbon chain with at least three extra-catenic primary amino nitrogen groups thereon, with at least 0.5 mole, per primary amino group in said polymeric polyprimary amine, of a member selected from the class consisting of diaryl carbonates and diaryl thiocarbonates.

Flame Resistant Cellulose Acetate Butyrate

U. S. Patent 2,680,691. Harry S. Olson and Robert C. Danison, Painesville, Ohio, assignors to Diamond Alkali Company, Cleveland, Ohio, a corporation of Delaware.

An organic, resinous, transparent, flame-resistant, thermoplastic composition consisting essentially of 50-75% of cellulose acetate butyrate combined with 22-35% of chlorinated paraffin wax containing from 64% to 68% of chemically combined chlorine, and an organic stabilizer for said chlorinated paraffin wax to make in all substantially 100%, said stabilizer being an epoxy compound.

Water Reducible Fire-Resistant Coating

U. S. Patent 2,681,326. Conrad J Christianson, Harvey, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio.

A water reducible potentially reactive fire-retardant coating composition which comprises in combination: (1) 1% to 10% of an alkaline catalyzed amide-aldehyde resin wherein the amide is selected from the group consisting of urea, thiourea, butyl urea, hydroxy urea, ethanol urea, guanyl urea, diethylene triurea, acetyl urea, allyl urea and ethylidene urea; (2) 5% to 35% of an acidic ammonium phosphate catalyzed condensation product of an aldehyde and a second amide selected from the group consisting of cyanamide, dicyandiamide and guanidine; (3) 35% to 55% of an inorganic ammonium salt capable of releasing ammonia under flame conditions; (4) 7% to 12% of a monomeric saturated aliphatic organic compound selected from the group consisting of dicarboxylic acids, hydroxy dicarboxylic acids, acid salts and salts of said acids containing not less than 1 nor more than 8 methylene groups and (5) the remainder of the composition consisting of a blend of pigments comprising china clay and zinc oxide.

LANCASTER, ALLWINE & ROMMEL
REGISTERED PATENT ATTORNEYS

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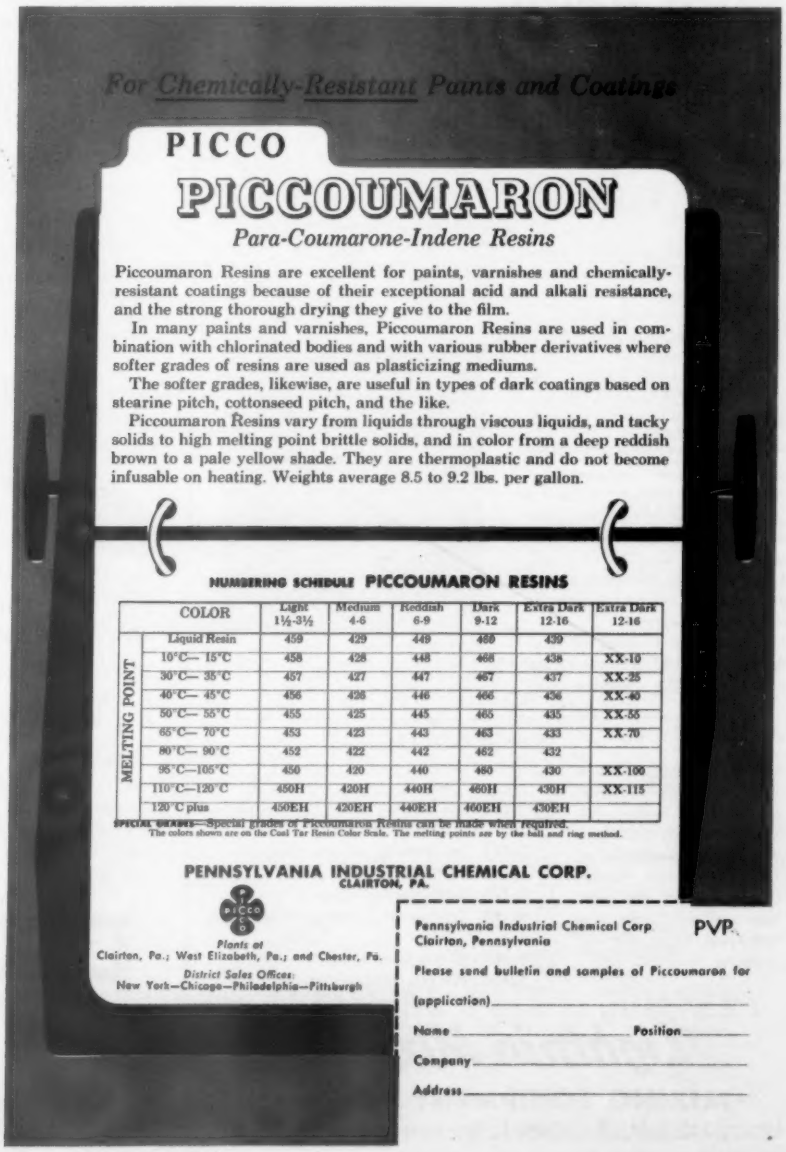
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Piccoumaron Resins are excellent for paints, varnishes and chemically-resistant coatings because of their exceptional acid and alkali resistance, and the strong thorough drying they give to the film.
In many paints and varnishes, Piccoumaron Resins are used in combination with chlorinated bodies and with various rubber derivatives where softer grades of resins are used as plasticizing mediums.
The softer grades, likewise, are useful in types of dark coatings based on stearine pitch, cottonseed pitch, and the like.
Piccoumaron Resins vary from liquids through viscous liquids, and tacky solids to high melting point brittle solids, and in color from a deep reddish brown to a pale yellow shade. They are thermoplastic and do not become infusable on heating. Weights average 8.5 to 9.2 lbs. per gallon.
NUMBERING SCHEDULE PICCOUMARON RESINS
COLOR | Light 1½-3½ | Medium 4-6 | Reddish 6-9 | Dark 9-12 | Extra Dark 12-16 | Extra Dark 12-16
MELTING POINT
Liquid Resin | 459 | 429 | 449 | 469 | 439 |
10°C— 15°C | 458 | 428 | 448 | 468 | 438 | XX-10
30°C— 35°C | 457 | 427 | 447 | 467 | 437 | XX-25
40°C— 45°C | 456 | 426 | 446 | 466 | 436 | XX-40
50°C— 55°C | 455 | 425 | 445 | 465 | 435 | XX-55
65°C— 70°C | 453 | 423 | 443 | 463 | 433 | XX-70
80°C— 90°C | 452 | 422 | 442 | 462 | 432 |
95°C—105°C | 450 | 420 | 440 | 460 | 430 | XX-100
110°C—120°C | 450H | 420H | 440H | 460H | 430H | XX-115
120°C plus | 450EH | 420EH | 440EH | 460EH | 430EH |
SPECIAL GRADES—Special grades of Piccoumaron Resins can be made when required.
The colors shown are on the Coal Tar Resin Color Scale. The melting points are by the ball and ring method.
PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
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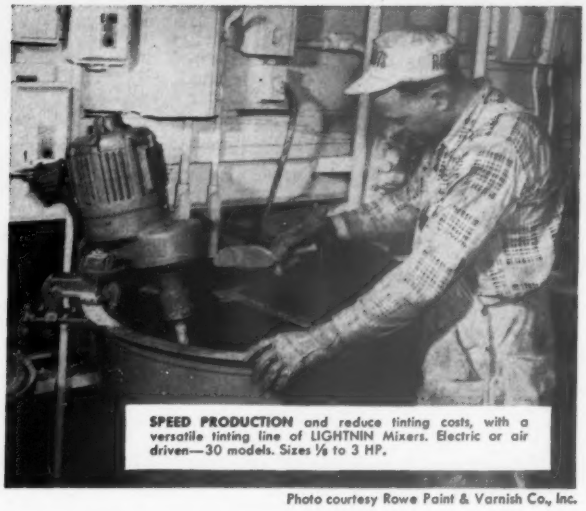

SPEED PRODUCTION and reduce tinting costs, with a versatile tinting line of LIGHTNIN Mixers. Electric or air driven—30 models. Sizes ⅙ to 3 HP.

Photo courtesy Rowe Paint & Varnish Co., Inc.

Tint paint in 3 minutes

How long does it take you to tint a 75-gallon batch to complete color uniformity?

Only three minutes—when you use a LIGHTNIN Portable Mixer.

You get fast, powerful mixing action with a LIGHTNIN . . . power that *sweeps* pigment off the tank bottom, *tumbles* the batch smoothly and rapidly, while *rotating* it. And you save cost—because all the power goes into the batch being mixed.

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Make your own inexpensive change-can mixer with a LIGHTNIN Portable. Just mount it on a post or other support. It's easy to mix different colors—because shafts and propellers can be switched in a few seconds.

You can do dozens of mixing jobs quickly, thoroughly with LIGHTNIN Mixers. Get set now to handle peak loads efficiently, by adding one or more LIGHTNINS to your regular processing line.

For facts on the right LIGHTNIN for your need, just call your LIGHTNIN representative (listed in your office copy of Thomas' Register). Or write us today.

THIN BIG BATCHES of varnish base, in as little as three minutes, with a turbine-type LIGHTNIN Mixer. Models for open, closed tanks. Sizes 1 to 500 HP.

GET THESE HELPFUL FACTS ON MIXING—LIGHTNIN Catalogs are packed with useful data on fluid mixing, plus full description of LIGHTNIN Mixers. No obligation. Check the catalogs you want and mail with your name and address to:

- ☐ **DH-50** Laboratory Mixers
- ☐ **DH-51** Explosionproof Laboratory Mixers
- ☐ **B-102** Top Entering Mixers (turbine and paddle types)
- ☐ **B-103** Top Entering Mixers (propeller type)
- ☐ **B-104** Side Entering Mixers
- ☐ **B-105** Condensed Catalog (complete line)
- ☐ **B-107** Mixing Data Sheet
- ☐ **B-108** Portable Mixers (electric and air driven)

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CALENDAR OF EVENTS

Aug. 30-Sept. 1. 34th Convention of American Soybean Assoc. Hotel Peabody, Memphis, Tenn.

Sept. 12-17. ASC meeting, Div. of Paint, Plastics, and Printing Ink Chemistry, New York City.

Oct. 11-13. American Oil Chemists' Society, Hotel Radisson, Minneapolis, Minn.

Nov. 15-17. 66th Annual Convention, National Paint, Varnish, and Lacquer Assoc., Palmer House, Chicago.

Nov. 18-20. 32nd Annual Meeting of Federation of Paint and Varnish Production Clubs, and 19th Paint Industries' Show, Palmer House, Chicago.

Production Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Hotel Alms.
Dayton — Nov., Feb., April, Suttmillers.
Indianapolis — Sept., Claypoll Hotel.
Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Last Monday, E Jardin Restaurant, San Francisco

Houston, 2nd Tuesday, Seven Seas Restaurant.

Kansas City, 2nd Wednesday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, Puritan Hotel, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

St. Louis, 3rd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

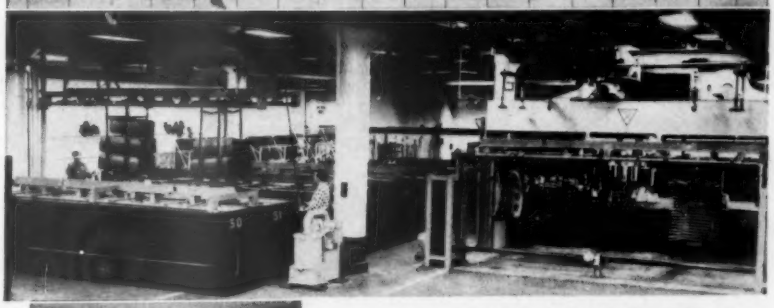
Toronto, 3rd Monday, Diana Sweets, Ltd.

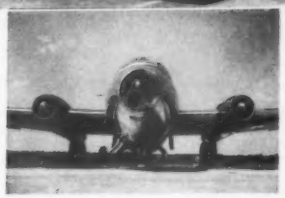
Western New York, 1st Monday, 40-8 Club, Buffalo.

USAF... Martin B-57's ARE Alodized

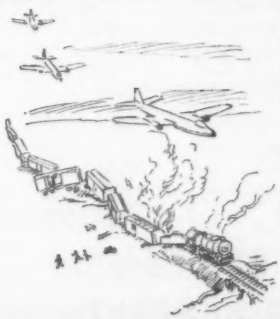
WITH ALODINE® No. 1200

for EXTRA PROTECTION





View of a modern "Alodine" No. 1200 installation at the Glenn L. Martin Company plant, Baltimore, Md. In these dip tanks, aluminum components of the USAF B-57 (top) are protectively treated with American Chemical Paint Company's "Alodine" No. 1200.



Alodizing creates a durable bond for paint, and greatly enhances aluminum's natural corrosion resistance, particularly in salt air. Alodizing meets the requirements of Military Specification MIL-C-5541, and was adopted by Martin after a long test period.

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TECHNICAL Bulletins

STYRENE MONOMER

Styrene monomer and its uses are described in a new 23-page illustrated bulletin issued by the Chemical Division of Koppers Co., Inc. Properties of the derivatives and specifications of styrene monomer are given, together with applications of the basic chemical in production of styrene butadiene latices, styrenated drying oils, styrenated alkyds, styrene-acrylonitrile copolymers, styrene-maleic resins, and other chemical derivatives.

Called Bulletin C-4-198, it may be obtained from the company's Chemical Division, Koppers Bldg., Pittsburgh, 19, Pa., together with its companion bulletin, C-4-119, of a more detailed nature.

HANDLING EQUIPMENT

Complete information on the company's line of material handling equipment is presented in a catalog recently issued by the Revolvator Co., North Bergen, N. J. Of particular interest to paint manufacturers, are various devices to handle 55-gal. drums and the company's explosion-proof lift truck. Copies of this bulletin may be obtained by writing to the Revolvator Co. at the above address.

ANTIOXIDANT

Detailed descriptions, technical and non-technical, and suggested uses of "dbpc" antioxidant are contained in two new bulletins published by the Chemical Division of Koppers Company, Inc., Koppers Bldg., Pittsburgh 19, Pa.

Technical Bulletin C-4-115 furnishes toxicological information, descriptions of chemical reactions, and commercial information on this product, which has been tested and proved effective as an antioxidant for fatty foods and hydrocarbon materials such as petroleum products, rubber, and plastics.

In the second bulletin, C-4-197, information in non-technical language is furnished on the use of "dbpc" antioxidant in food, plastics, rubber, insulating oils, petroleum fuels, lubricants and waxes, and non-edible animal and vegetable oils.

PAINT STRIPPING RACK

The cost of stripping old paint from freight cars, passenger cars and locomotives can be sharply reduced, and the time cut down to minutes, with the help of a simple paint stripping rack according to Pennsylvania Salt Manufacturing Company.

It is said that the rack, designed in cooperation with the Mechanical Department of an Eastern railroad, also saves paint stripping solution by returning the run-off to the solution tank for recirculation. By using a stripping rack on both sides of the track, cars can be stripped completely in a matter of minutes. The equipment can be made up by railroad labor forces from readily available shop materials.

Pennsalt #23 Paint Stripping Compound, a concentrated alkaline material, is used in the heated solution tank which is a part of the rack. The manufacturer claims that this product will remove any number of coats of paint quickly, and will rinse clear without leaving white deposits.

Free schematic blueprints of the paint stripping rack can be obtained by writing to Pennsylvania Salt Manufacturing Company, Maintenance Chemicals Department, 1000 Widener Building, Philadelphia 7, Pa.

Finding Answers to problems in

CARBON BLACK

When you call on WITCO-CONTINENTAL for technical service in carbon blacks for tinting and coloring, one of the most modern and complete laboratories in the carbon black field is put to work on your problem. Second to none in the quality of its staff and facilities, WITCO-CONTINENTAL's Carbon Black Technical Service and Research Laboratory has solved many application problems in the paint industry.

We may already have the answers you need. And if we don't, we have the men and the scientific testing equipment to find them for you . . . whenever you say the word.

WITCO-CONTINENTAL manufactures a complete line of furnace and channel blacks for the paint industry, their quality assured by modern plants, strict product control, extensive research, the best in technical service.

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TESTING INSTRUMENTS

Complete line of its testing equipment for the paint industry is described in 1954 catalog of Gardner Laboratory, Inc. Illustrated 60-page catalog is available from the company at 4723 Elm Street, Bethesda 14, Md.

FORK TRUCKS

In a four color, illustrated book recently published by the Baker-Raulang Company, builders of industrial trucks, Cleveland, Ohio the anatomy of electric fork trucks is closely examined, using Baker's FT-40 400 pound capacity truck as the specimen.

A series of 20 pictures of the most important components of fork trucks, complete with explanatory copy, make this book an ideal reference for executives who are concerned with the operation and maintenance of industrial fork lift trucks.

Copies of the book may be obtained by writing The Baker-Raulang Company, 1250 West 80 th Street, Cleveland, Ohio, for book number 64.

WETTING AGENT

Case histories on the use of Nuosperse 657 in various coating applications are presented in handy file folder recently issued by the Nuodex Products Co., Inc., Elizabeth, N. J. This additive has been successful in solving certain specific wetting, anti-settling and dispersion problems.

ACRYLONITRILE RESEARCH

Latest collection of abstracts on acrylonitrile research is available from the Petrochemicals Dept., American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.

PAINT FILTRATION

Filtration of industrial and automotive paint products for both producer and user is described in a new catalog, #054. Applications, advantages and characteristics of filtration equipment are covered on enamels, solvents, lacquers, thinners, varnishes and air. Typical set ups on filling, spray, dip tank and flow coat operations are included. Published by Cuno Engineering Corporation, Meriden, Connecticut.

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Model 18-S-12
Varnish Filter
(steam jacketed)

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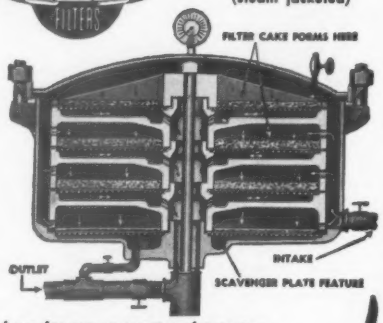
Write Mr. Erle Anderson



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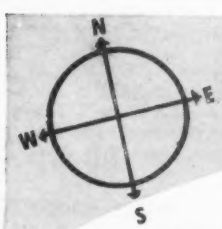

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PVA PAINTS

"Gelva Emulsion for Paint", a complete 16 page manual for paint manufacturers on Shawinigan GELVA, polyvinyl acetate emulsions and their use in interior and exterior paints, is now available from Shawinigan Products Corporation, 350 Fifth Avenue, New York, N. Y.

The book has been published to assist technical men in the formulation, handling and production of polyvinyl acetate emulsion paints. It reports on specific pigments, plasticizers, thickeners, wetting agents and other modifiers recommended in the preparation of commercially practical polyvinyl acetate emulsion finishes and includes suggested manufacturing procedures.

METHANOL

A new 16 page booklet on synthetic methanol has just been published by Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

The booklet, "Methanol" (F-8141) has been prepared for people in the chemical industry: chemists, engineers, purchasing agents, and production and laboratory workers. It contains information of the uses, physical properties, shipping data, specifications, and constant-boiling mixtures of methanol. Fourteen graphs on vapor pressures, specific gravities, freezing points, viscosities, and other important physical properties of methanol, make this booklet excellent for reference.

ETHANOLAMINES

Jefferson Chemical Company, Inc., has recently published a 40-page booklet on monoethanolamine, diethanolamine, and triethanolamine which presents physical, toxicological and chemical properties, sales specifications, methods of analysis, uses, and handling and storage information.

The bulletin describes the broad use pattern of these three commodities and mentions gas sweetening, detergents, corrosion inhibitors, rubber chemicals, agricultural chemicals, emulsifying agents, coatings, etc.

Copies of the Ethanolamine Technical Bulletin may be obtained by writing to Jefferson Chemical Company, Inc., 260 Madison Avenue, New York 16, N. Y.

CHLORINATED BENZENES

Chlorinated Benzenes are described in a new technical handbook, "Chlorinated Benzenes," prepared by The Dow Chemical Company for laboratory, research, production and purchasing personnel.

Described in the booklet are Monochlorobenzene, o-Dichlorobenzene, p-Dichlorobenzene and 1,2,4-Trichlorobenzene—all manufactured by Dow. Derivative charts, end uses, property and solubility tables and toxicity and handling precautions are given.

In a pocket in the back cover of the manual, Shawinigan inserts individual formula sheets for interior or exterior formulations. Each sheet contains step by step compounding instructions.

According to the manual, Shawinigan's research resulted in a series of U. S. Patents covering the use of free-filming emulsions and principles of formulation for the commercial preparation of quality paints. The information presented is based on this research as well as on commercial exposures of paints based on Gelva emulsions over a period of five years.

SUCCINIC ANHYDRIDE

Dodecenylsuccinic anhydride is the subject of a new six-page folder, Technical Bulletin I-8, which should be of interest to producers of plastics, natural and synthetic rubbers, paints, enamels and varnishes. This bulletin is now available from National Aniline Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6. In addition to valuable information on the physical and chemical properties and uses of the anhydride it contains two graphs. The first graph is entitled Infra-Red Absorption Spectogram, while the other deals with the effect of temperature on the viscosity of dodecenylsuccinic anhydride. A bibliography of eleven references is included.

SAFETY DEVICES

The National Safety Council's new book, "Safety Devices and Ideas," describes more than 90 safety devices which have been tried and found effective in plant use.

The devices were originally part of a safety gadget show presented during the chemical sessions of the 1953 National Safety Congress. Although designed for use in chemical plants, the devices have application in other industries as well.

Most of the devices are not commercially available, having been thought up and constructed by plant personnel to meet some particular hazard. Copies may be obtained for a nominal price by writing to National Safety Council, 425 N. Michigan Avenue, Chicago, Ill.

Accurate temperature control with a modulated circulatory system, a heavily insulated cabinet and other features make the DMC Weather-Ometer an important new addition to the Atlas line.

The modulated circulatory system in the DMC Weather-Ometer provides a controlled volume of air circulated at a constant temperature for maintaining an even temperature in the test chamber regardless of outside room temperature. The heavily insulated cabinet is effective in maintaining accurate controlled temperatures with the resulting high degree of accuracy in making duplicate tests in product development and maintaining uniformity in production control. Controlled relative humidity is available as optional equipment.

All automatic controls including complete voltage controls are located on the front panel of the Weather-Ometer directly above the door of the test chamber.

Both horizontal and vertical testing is available. Cup containers for bitumens and other semi-liquid materials and vertical panels for solid materials.

Source of radiation is two Atlas enclosed violet carbon arcs.

Complete technical information on the DMC model and other Weather-Ometers is contained in the new Weather-Ometer catalog. A copy will be mailed on request.

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65 New Standards Approved at 1954 ASTM Annual Meeting

Featured by 36 technical sessions at which were presented 110 technical papers covering various aspects of engineering materials, the 1954 Annual Meeting of the American Society for Testing Materials, held throughout the week of June 13 at Chicago, also included 600 meetings of the technical committees.

Seventy-two of the Society's technical committees reported at the meeting, with the result that 65 new specifications and tests were approved and revisions in 229 existing tentatives and standards were acted on. A total of 109 specifications and tests that have been published previously were approved for reference to Society letter ballot for adoption as standard. All of these new and revised standards will be published later in the year in the 1954 Supplement to the Book of ASTM Standards.

Including the 1954 Annual Meeting actions there are now about 2120 ASTM Standards. This compares with the figure twenty years ago of 730 and ten years ago, 1944, of about 1280. These figures indicate a definitely increased tempo in standardization activities during the last decade.

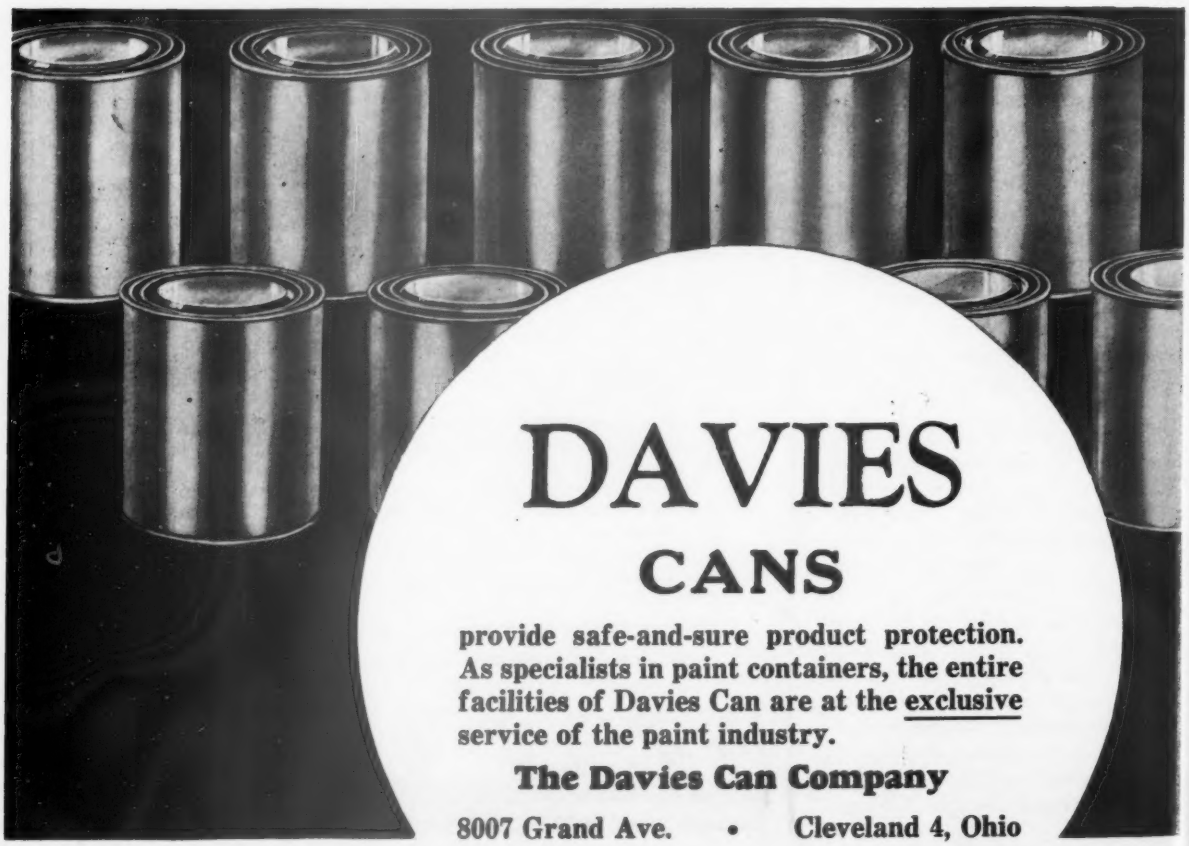
The meetings of main technical committees and their subcommittees, totaling 600, were in progress from Sunday, June 13 through Friday, June 18. At times there were as many as 62 meetings running simultaneously. It was estimated that at the 1953 meeting there were about 565 meetings.

•

Nat'l Lead to Increase TiO_2 Facilities at St. Louis Plant

National Lead Company will begin construction immediately of new facilities for the production of titanium dioxide at St. Louis, Joseph A. Martino, president, announced recently. The additional capacity, about 36,000 tons a year as titanium dioxide will be added on top of expansions three years ago at both the Sayreville, N. J. and St. Louis, Missouri titanium pigment plants of the company. It is expected that the new production will begin in July of 1955, with the new facilities in full operation by the end of the year.

Heretofore the St. Louis plant has been restricted to the production of calcium-base titanium pigments (Titanox-C). The new facilities are so designed as to permit greater manufacturing flexibility as they can be used for the production of either calcium-base or pure pigment, and can be switched at will as demand for one type of pigment might exceed the other.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provide safe-and-sure product protection. As specialists in paint containers, the entire facilities of Davies Can are at the exclusive service of the paint industry.
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KP-23 BUTYL OLEATE

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New Book

Carbon Blacks

Carbon Blacks for Protective and Decorative Coatings by L. J. Venuto. Available from Binney & Smith Inc., 380 Madison Ave., New York 17, N. Y.

In this book, Mr. Venuto has attempted "to bring together some of the useful knowledge that has been gained and to place it before our friends in the protective and decorative coatings industry in such manner as to make it available for reference purposes". It is also designed as an aid in the selection of the particular Binney & Smith Co.'s carbon black most suited for the specific application.

Mr. Venuto, who has come to be known as "Mr. Carbon Black" because of his pioneering work in the field of carbon black, traces briefly the manufacturing history to date and discusses the methods of production of carbon black.

Properties of carbon black are handled in terms of the "three building stones" —particle size, surface chemistry and structure. Special characteristics of carbon black are also reviewed. A brief description of tests made on carbon blacks and their significance is included.

Dispersion of carbon black, along with the factors influencing dispersion, ie—carbon black, vehicle, and milling—are discussed.

Twenty problems encountered with or attributed to the use of carbon black are reviewed and remedies are furnished.

Carbon blacks manufactured by Binney & Smith are listed and described and the factors determining the selection of particular blacks for individual cases are discussed. Use of carbon blacks for tinting is included.

This book is an excellent compilation of all the facets involved in the use of carbon blacks. In spite of the inclusion of data on the individual carbon blacks manufactured by Binney & Smith, the book cannot be considered a company product catalog but rather as text on the subject of carbon black.

D. B. Becker Announces Formation of New York Sales Agency

D. B. Becker Company, with headquarters at 150 Nassau St., New York City, has been organized, according to an announcement from Daniel B. Becker, to act as manufacturers representatives in the New York-New Jersey area to the paint and allied industries. At present the firm represents American Alkyd Industries, Carlstadt, N. J.; Magna Mfg. Co. Inc., Haskell, N. J., and Shepherd Chemical Company, Cincinnati, Ohio.

BIG NEWS

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★Speeds Pre-Mixing

The Cowles Dissolver pre-mixes pigments in vehicles, producing a fast, smooth mix that's ready for further milling or fine grinding. Because it accomplishes some grinding, it enables certain grades of paint to be prepared in one operation.

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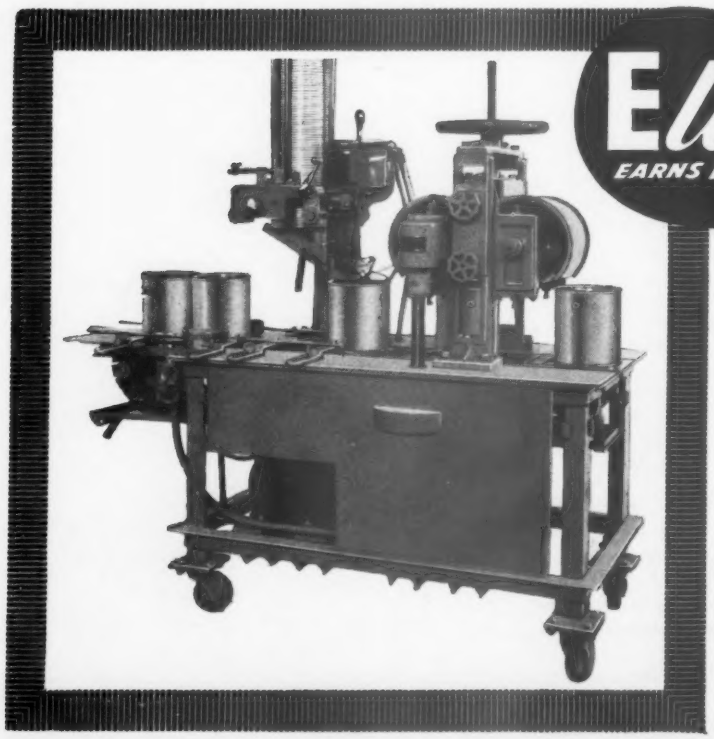

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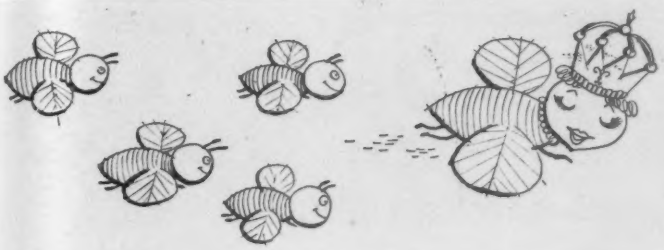

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Color, Gardner 1933, Max.	1
Viscosity, Gardner-Holdt, 25°C	U-X
Hydrocarbon Solvent Tolerance*, Min.	300
Acid Number, Solid Resin, Max.	1
Pounds per Gallon, Approx.	8.5

*Pounds of Hydrocarbon Solvent mixture (76.4% Pure Grade n-Heptane and 23.6% C.P. Toluene, by weight) tolerated by 100 pounds of Resin Solution.

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retains washability with excellent flatness

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